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IN THE

~~SUPREME COURT OF THE UNITED STATES~~

October Term, 1989

ANDREW DOWNIE,

DANIEL MATTHEWS,

MARTIN MAROTTA,

CHARLES CARROLL; Petitioners,

vs

STATE OF NEW JERSEY; Respondent.

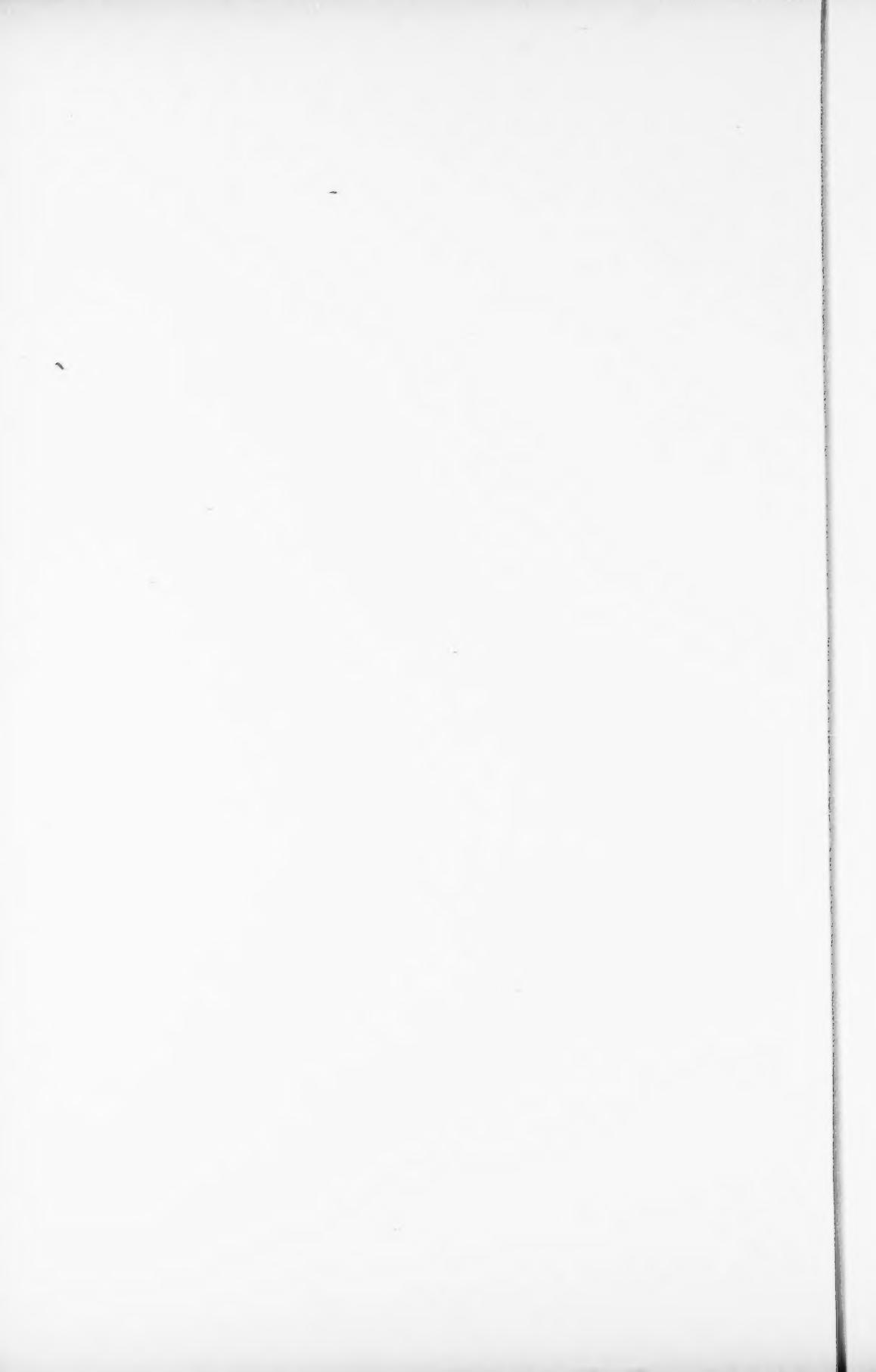
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PETITION FOR WRIT OF CERTIORARI TO  
THE SUPREME COURT OF NEW JERSEY

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Bar of The United States  
Supreme Court

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## **QUESTIONS PRESENTED**

- 1. DOES THE NEW JERSEY SUPREME COURT CREATE A CONCLUSIVE OR UNREASONABLE PRESUMPTION IN VIOLATION OF THE 14TH AMENDMENT REGARDING THE RELIABILITY OF THE BREATHALYZER READING IN THE CONTEXT OF A PER SE STATUTE?**
- 2. WHETHER N.J.S.A. 39:4-50 WITH THE WORD BREATH ADDED BY THE NEW JERSEY SUPREME COURT IS VAGUE IN VIOLATION OF THE DUE PROCESS CLAUSE OF THE FOURTEENTH AMENDMENT?**
- 3. DOES N.J.S.A. 39:4-50 AS INTERPRETED BY THE N.J. SUPREME COURT, WHERE ADMITTEDLY 2.3% OF THE POPULACE IS TREATED DIFFERENTLY, THEN THE REST OF THE POPULATION, BECAUSE OF THEIR BODIES, VIOLATE THE EQUAL PROTECTION CLAUSE OF THE FOURTEENTH AND FIFTH AMENDMENT?**
- 4. DOES THE NEW JERSEY SUPREME COURT'S DETERMINATION IN IT'S MARCH 23, 1989 ORDER, VIOLATE THE PETITIONER'S PROCEDURAL DUE PROCESS AND SIXTH AMENDMENT CONSTITUTIONAL RIGHT TO A HEARING AND TO DEFEND HIMSELF?**

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**JURISDICTIONAL STATEMENT**

Petitioners, Downie, Matthews, Marotta and Carroll <sup>1</sup> appeal from the final judgment of the Supreme Court of New Jersey, entered on March 23, 1989 denying the petitioners/appellants their right to the hearing they requested, and becoming final on January 31, 1990 amending N.J.S.A. 39:4-50 by judicial fiat.

Petitioner asserts that the interpretation of petitioners right to present exculpatory evidence, and the evidence already presented violate the fourteenth and sixth amendments to the federal constitution. Further, petitioner asserts that the judicial fiat changing the statute creates a vague statute in violation of the fourteenth amendment. Finally, the evidences already presented and the interpretation of that evidence in the context of the statute violate the equal protection clause of the fourteenth and fifth amendments of the constitution. Petitioner raises three federal issues not directly raised below.

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1. Hereinafter noted as petitioners.

## **JURISDICTION**

The judgment of the New Jersey Supreme Court denying the defendant a full and fair hearing was ordered on March 23, 1989. The judicial order creating new legislation was ordered on January 31, 1990. The notice of appeal to this Court was filed within 90 days of the final judgment below.

The jurisdiction of this Court is invoked under 28 USC Sec 1257(2). Although, it has been restated to address this Court, the forth issue was substantially presented below upon a grant of an interlocutory certification. Petitioners believe that 28 USC Sec 2403(b) may apply and will comply with same.

The apparent granting of petitioners' request for a hearing does not destroy this Court's jurisdiction. Indeed, petitioners challenged the New Jersey Supreme Court to allow a full and fair hearing; not limited to just those issues the Supreme Court picked out of the air without adequate consultation with petitioners.

Questions One, two and three presented, although not raised directly below, and thus nonappealable, are properly subject to this Court's power to "take jurisdiction over any aspect of this case which would otherwise fall solely within [it's] certiorari jurisdiction." Cox Broadcasting Corp. v Cohn, 420 US 469, 487 n. 14 (1975). See also Flournoy v Weiner, 321 US 253, 263 (1944) and Prudential Ins. Co. v Cheek, 259 US 530, 547 (1922).

Although this appeal is interlocutory in nature, petitioners assert that the decision of the New Jersey Supreme Court is final. The issues presented by petitioners need to be determined before trial to allow a fair trial.

The issues presented are questions of first impression before this Court. The petitioners assert that the questions

presented have nationwide significance. The petitioners assert that the record below provides the most comprehensive review, by the foremost experts in the field of breathalyzer evidence, ever put before a Court in this nation. Finally, the petitioners assert that because the federal government mandates that States must create legislation allowing courts to find people guilty based on breathalyzer readings alone and the inability of this machine to create reliable results, cries out for this Court to grant Certiorari.

The petitioners will rely upon the Fifth, Sixth, and Fourteenth Amendments to the Constitution of the United States.<sup>1</sup>

### **STATEMENT OF THE CASE**

The petitioners/defendants have each been charged with a violation of N.J.S.A. 39:4-50. Each of the petitioners are represented by the firm of Francis X. Moore, P.A.

On March 30, 1988 petitioners moved before the Honorable Donald Pappa, J.M.C., at the trial court level, for an order consolidating their respective cases into one court, for the purpose of a pretrial hearing on the breathalyzer. MT30-21.<sup>2</sup> The petitioners were granted their request for pretrial conference pursuant to Rule 3:13-1 by the trial court.

Briefs were ordered regarding all arguments to be presented, and the burdens proposed on each issue.

On May 20, 1988 the trial court signed orders consolidating the cases, and setting June 25, 1988 as the

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1. For the full text of the provisions relied upon by the petitioner see PA-210.

2. MT stands for the Municipal transcript dated March 30, 1988, at appendix PA-37 to PA-79.

date for the preliminary conference. Pretrial briefs were to be filed no later than June 17, 1988. <sup>3</sup>

On an unknown date, the County Assistant Prosecutor, Mark Stalford approached the Monmouth County Assignment Judge, Alvin Milberg regarding an appeal of the trial court's March 30, 1988 order. The Assistant Prosecutor inquired regarding what steps the State must take to effect such an appeal.<sup>4</sup>

On June 10, 1988, before the pretrial briefs could be filed by the petitioners with the trial court, the County Prosecutor filed leave to appeal on an interlocutory basis, *nunc pro tunc*. The State's motion to file out of time was granted by Judge Milberg. After a hearing, with all parties present, Judge Milberg ordered that the Municipal trial court's consolidation be reversed.

Finally, Judge Milberg ordered that the petitioners should be allowed to have their R. 8 hearing, and that the petitioners were allowed to present their issues to the trial court for determination.

The State sought timely interlocutory leave from the New Jersey Superior Court, Appellate Division.

The Appellate Court granted leave on an emergent basis. The Appellate Court decision is found at State v Downie, 229 NJ Super 207 (App. Div. 1988), at appendix PA-28.

Petitioners then sought timely leave before the Supreme Court of New Jersey. Certification was granted.

Petitioners assert that they followed the proper procedures in attempting to present their issues before the trial court. And that the case should be remanded to allow the trial court to determine the issues and the appropriate burdens. At no time are petitioners ever questioned by the New Jersey Supreme Court regarding these issues.

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3. See appendix at PA-111 to PA-115.

4. See Appendix PA-38.

The New Jersey Supreme Court ordered the case be remanded for a fact finding hearing before the Superior Court, Law Division. The New Jersey Supreme Court, without consulting petitioners, ordered which issues should be determined and were allowed to be presented on remand.<sup>5</sup> Petitioners were further restrained by the remand court regarding the boundaries of their questions.

The following experts testified on remand in the order in which they appeared chronologically. Doctor Robert F. Borkenstein; Patrick Harding; Doctor Allan W. Jones; Doctor James P. Payne; Doctor Gerald Simpson; Doctor Michael P. Hlastala; Nizar K. Shajani; Doctor Kurt M. Dubowski; Douglas M. Lucas; Rodney G. Gullberg.<sup>6</sup> Petitioners assert that the remand hearing provides this Court with the most extensive record about the breathalyzer ever put before any Court in this country.

After remand, the case was set for oral argument before the New Jersey Supreme Court. No briefs were requested regarding the issues presented by remand. Petitioners were never allowed the opportunity to argue within the facts created by remand, regarding what issues be considered by the Supreme Court.

At oral argument petitioners were not questioned about nor was the legislative intent ever discussed by the New Jersey Supreme Court. Throughout the proceedings below petitioners relied upon the clear language contained in N.J.S.A. 39:4-50.

Had briefs been allowed or requested, the petitioners would have raised the issues brought before this Court, below. The individuals were then remanded back to the Municipal Court for trial.

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5. March 23, 1989 order attached at appendix PA-105 to PA-107.

6. See appendix PA-116 to PA-209.

## THE QUESTIONS PRESENTED ARE SUBSTANTIAL

This Court "has repeatedly lamented the tragedy" of the "carnage caused by drunk drivers." *South Dakota v Neville*, 459 US 553, 558 (1983). In attempting to facilitate, by whatever means, easy drunk driving convictions through strained interpretation of legislative intent, the New Jersey Supreme Court has overreacted to this Court's pleas. See also *State v Tishio*, 107 NJ 504 (1987).

The New Jersey Supreme Court has again attempted to preclude the petitioners from presenting exculpatory evidence on their own behalf, and by adding a word to N.J.S.A. 39:4-50 has effectively, by judicial fiat, legislated a new statute. Justice Stein stated in the dissent that the New Jersey Supreme Court,

... is afflicted with a severe case of institutionalized amnesia. It has either forgotten, or has unaccountably ignored, the most basic distinction between the legislative and judicial branches of government.

Underlying this litigation was the premise, acknowledged by all parties and the New Jersey Supreme Court, that New Jersey's drunk-driving statute is based on blood alcohol content. *State v Downie, et. al.*, 117 NJ 450 (1990), at PA-1.

In response to federal legislation making the receipt of certain federal highway funds contingent upon the enactment of laws that attach criminal liability to persons with blood alcohol levels in excess of .10% many States legislated directly against driving with the proscribed alcohol level. See 23 USC Sec. 408(e)(1)(C).

Throughout the proceedings below, petitioners relied upon the apparently clear language contained in N.J.S.A. 39:4-50.<sup>7</sup>

1. DOES THE NEW JERSEY SUPREME COURT CREATE A CONCLUSIVE OR UNREASONABLE PRESUMPTION IN VIOLATION OF THE 14TH AMENDMENT REGARDING THE RELIABILITY OF THE BREATHALYZER READING IN THE CONTEXT OF A *PER SE* STATUTE?

Yes. Any time that either a court or the legislature creates a presumption within the confines of a criminal statute the State has the burden of proving the reasonableness of the presumption. *United States v Gainey, et. al.*, 380 US 63, 66, 13 L Ed 2d 658, 662 (1965).

... the constitutionality of the legislation depends upon the rationality of the connection "between the facts proved and the ultimate fact presumed." *Id.*

This Court created three different types of presumptions which must be considered under the due process standards of the 14th Amendment; permissive, mandatory and conclusive.

Petitioners assert that the New Jersey Supreme Court has created a conclusive presumption that breathalyzer results are reliable and will be the same for each person. Petitioners assert if this Court concludes the presumption

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7. The Attorney General, as *Amicus* below, argued that petitioners were not entitled to a remand hearing because it was possible to interpret the Statute. The New Jersey Supreme Court apparently did not agree with the Attorney General's position, when the Court ordered that there be a remand.

created by the New Jersey Supreme Court is only permissive, the facts provided by the remand hearing mandates that reasonable minds shift the burden of proof to petitioners. Such a shifting of the burden creates a situation where the State is relieved of its burden to prove guilt beyond a reasonable doubt, and violates due process.

The State of New Jersey relies upon the breathalyzer as the means to prove a defendant guilty of violating the *per se* section of N.J.S.A. 39:4-50. The breathalyzer used depends upon a conversion ratio of 2100 to 1.<sup>8</sup>

The New Jersey Supreme Court would have this Court believe that this overestimation only occurs in 2.3% of the population. However, the New Jersey Supreme Court conveniently forgets the proofs show that, any one person, at any time in that persons life, may be part of that 2.3 percent, and thus be subject to conviction, automatically, and improperly.

It is impossible to prove just who is less than 2100 to 1 and whether this person is less than 2100 to 1 at the time the officer requests the defendant to submit to the breathalyzer.

Petitioners rely upon Justice Blacks definition of a presumption for definitional purposes. Justice Black, in his dissent in *United States v Gainey*, *supra*. at 380 US 78 stated that,

In its simplest form a presumption is an inference permitted or required by law of the existence of one fact, which is unknown or which cannot be proved, from another fact which has been proved. The fact

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8. The breathalyzer makes use of this same ratio whether the New Jersey Supreme Court creates a new statute by adding the word breath or whether the obvious interpretation of the statute is used. Thus, even in a breath statute some people are overestimated as against the norm of 2100 to 1. See Point 3 below.

presumed may be based on a very strong probability, a weak supposition or an arbitrary assumption. The burden on the party seeking to prove the fact may be slight, as in a civil suit, or very heavy - proof beyond a reasonable doubt - as in a criminal prosecution.... The validity of each presumption must be

determined in the light of the particular consequences that flow from its use. When matters of trifling moment are involved, presumptions may be more freely accepted, but when consequences of vital importance to litigants and to the administration of justice are at stake, a more careful scrutiny is necessary.

In *Francis v Franklin*, 471 US 307, 313, 314, 85 L Ed 2d 344, 353 (1985) this Court held that the first threshold analysis is to determine the nature of the presumption we are dealing with. These petitioners request this Court determine whether the presumption created by the New Jersey Supreme Court is permissive or mandatory in nature in light of the facts created on remand. And if this Court concludes the presumption created by New Jersey Supreme Court is mandatory, is it conclusive? A mandatory presumption is more likely to invoke the protections of the 14th Amendment, particularly if this mandatory presumption is not subject to rebuttal, as in the present case. However, even a permissive presumption may be improper if "... the suggested conclusion is not one that reason and common sense justify in light of the proven facts before the jury (or judge)." *Id.* at 314, 315.

The test for determining what constitutes a mandatory presumption was created in *Sandstrom v Montana*, 442 US 510, 61 L Ed 2d 39 (1979). This Court indicated that the test for a jury instruction is what "might reasonably have been understood by the jury (or trial court) as creating a mandatory rebuttable presumption."

In the present case, the New Jersey Supreme Court orders that trial courts must find that a breathalyzer reading is an accurate and precise reading in terms of any defendant, despite the State's failure or inability to prove facts which indicate such a preciseness, because of each person's body's metabolism.<sup>9</sup>

The New Jersey Supreme Court fails to follow its' own rules of evidence. For if this reading is offered and the reading is above a .10 the defendant is guilty, end of story; even if reasonable minds could differ regarding the interpretation of just who is less than 2100 to 1, or whether the State could ever prove, beyond a reasonable doubt that any persons reading was actually .10.<sup>10</sup>

It is obvious that the New Jersey Supreme Court seeks by its ruling to relieve the State of the burden to prove the defendant's breath or blood reading beyond a reasonable doubt. Petitioners assert that the New Jersey Supreme Court's actions curtail the factfinders freedom to assess the evidence independently. *Ulster County Court v Allen*, 442 US 140, 156, 60 L Ed 2d 777, 791 (1979).

In criminal cases,

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9. See also New Jersey Evidence Rules 13, 14, and 15.

10. See appendix at PA-142, PA-149, PA-152, and PA-176 for discussion of expert's testimony in the within remand, wherein most experts agreed that it is impossible to ever prove that a breath test of .10 is proof beyond a reasonable doubt of an accurate precise reading of .10. Both the inventor of the breathalyzer, Doctor Borkenstein and Doctor Dubowski believe that it is improper to use the breathalyzer in the context of a *per se* statute.

See also *McMillan v Pennsylvania*, 477 US 79, 86, 91 L Ed 2d (1986) where this Court held that the reasonable doubt standard applies to facts not formally identified as elements of the offense charged.

... the ultimate test of any device's constitutional validity in a given case remains constant: the device must not undermine the factfinder's responsibility at trial, based on evidence adduced by the State, to find the ultimate facts beyond a reasonable doubt. *Id.*

Petitioners assert that the trier of fact is forced, by the New Jersey Supreme Court's order, to accept the fallacious inference ordered by that Court as acceptable. *Ulster County Court v. Allen*, *supra*. at 159. The New Jersey Supreme Court further ordered that neither petitioners nor anyone else may seek to rebut the presumption created. Thus, this Court not only can, but must find that this is a conclusive presumption and thus an irrebuttable presumption. This irrebuttable presumption relieves the State of its burden to prove beyond a reasonable doubt the violation of the *per se* section of N.J.S.A. 39:4-50. Thus, the presumption created within the confines of N.J.S.A. 39:4-50 creates a violation of the 14th amendment and is therefore improper. *Sandstrom v Montana*, *supra*. 442 US at 518. See also *Francis v. Franklin*, *supra*. 471 US at 314 n. 2.

The respondent will no doubt argue that the presumption created by the New Jersey Supreme Court is merely permissive. Given the framework of permissive presumptions, petitioners assert that if this Court believes only a permissive presumption is created, the presumption created is arbitrary and not reasonable within the framework of the scientific evidence presented and the *per se* nature of N.J.S.A. 39:4-50.

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11. The absurdness of this position must be looked at within the framework of the knowledge that the petitioner had to go before the Supreme Court of the State of New Jersey before he was allowed to present any evidence concerning the reliability of breathalyzer. See *State v Downie*, 229 NJ Super 207 (App. Div. 1988), at PA-28.

The test under the 14th amendment for the reasonableness of a permissive presumption is the rationality of the connection between the facts proved and the fact presumed. *United States v Gainey, et al.*, *supra*. 380 US at 66. Or the suggested conclusion must be one that reason and common sense justify in light of the proven facts. *Francis v. Franklin*, *supra*. 471 US at 314, 315. Do the facts as suggested in the remand, that 2.3% of the population, where every person may become part of that 2.3%, at any time in their life, rationally allow this Court to conclude that the trial court may convict the petitioners if his reading comes out above .10, without any other proofs? Also the proofs, as accepted by the New Jersey Supreme Court, suggest this 2.3% may be overestimated by as much as 30% with the norm of 2100 to 1.<sup>12</sup>

Petitioners assert this presumption is unreasonable for two reasons: The presumption created as to reliability of the reading is not based on extensive investigation by the legislature. See also *Kay v United States*, 255 F 2d 476, 481 (1958). It is obvious that the legislature was never advised regarding the affect of the methodology of the breathalyzer. Moreover, petitioners assert the sole reason for the enactment of the *per se* section of N.J.S.A. 39:4-50 was to obtain highway funds from the federal government. See *State v. D'Agostino*, 203 NJ Super 69, 75 (L. Div. 1984). This Court stated in *Manley v Georgia*, 279 US 1, 73 L Ed 575 ( ) that, "[a] mere legislative fiat may not take the place of fact in the determination of issues involving life, liberty and property." *United States v Warden of Clinton Prison*, 29 F Supp 486, 493 (1939).

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12. It must be noted, that the various research reported in the within remand, suggests that this variable may be much lower, with one report indicating as low as 1100 to 1, which will cause an overestimation of 100%.

Additionally, the reasonableness of this assumption, that every person is at least 2100 to 1, must be considered in the context of the *per se* statute the assumption provides evidence for. Particularly, where, as here, the breathalyzer reading, with the 2100 to 1 ratio, in the context of a *per se* statute, has not gained "such standing and scientific recognition" by the scientific community as would justify the courts in admitting the evidence. *Frye v United States*, 293 F. 1013, 1014 (1923).<sup>13</sup> Or allowing such evidence to become a permissive presumption. See also *Defuentes v Duggen* (Case No 89-669-CIV-ORL-19) F Supp - (1989) which recently declared a similar *per se* statute in Florida unconstitutional on its face based on the conclusive nature of the evidence.

The issue of reasonableness becomes one of whether or not the scientific community has generally accepted the use of a breathalyzer as *per se* evidence? The answer must be no! Therefore, the permissive influence is unreasonable. Thus, petitioners asserts such a permissive presumption violates due process.

2. WHETHER N.J.S.A. 39:4-50, WITH THE WORD BREATH ADDED BY THE NEW JERSEY SUPREME COURT, IS VAGUE IN VIOLATION OF THE DUE PROCESS CLAUSE OF THE FOURTEENTH AMENDMENT?

Yes. The New Jersey Supreme Court has once again imposed, by judicial fiat, a completely new statute for the

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13. The petitioner asserts that the *Frye* test is no longer the best test for consideration of the affect of scientific evidence. See *United States v Downing*, 753 F. 2d. 1224 (1985) which considers the *Frye* test as part of an overall approach. See Giannelli, "The Admissibility of Novel Scientific Evidence: *Frye v. United States* A Half Century Later," 80 Colum. L. Rev. 1197 (1980).

motoring public. The New Jersey Supreme Court has transformed narrow and precise statutory language into a vague statute.

The void for vagueness doctrine "requires that a penal statute define the criminal offense with sufficient definiteness that ordinary people understand what conduct is prohibited and in a manner that does not encourage arbitrary and discriminatory enforcement." *Kolender v Lawson*, 461 US 352, 357 (1983).

A fair reading of N.J.S.A. 39:4-50 or the legislative notes that follow, does not indicate to any reasonable person that his/her breath may become convicting evidence. The word breath simply does not appear in terms of what constitutes guilt.<sup>14</sup>

The New Jersey Supreme Court adds the word breath, because the Court realized, as Judge McGann stated in his conclusions of fact that, "the 2100 to 1 ratio is worthless for forensic purposes." (See PA-136). The New Jersey Supreme Court somehow believes that by adding the word breath to the statute, despite no indication by the legislature of its' intent to find people guilty by their breath alcohol level, the New Jersey Supreme Court can rationalize Judge McGann's conclusions.<sup>15</sup>

The simple fact remains that, ordinary citizens must be left in a quandary regarding what constitutes improper conduct under N.J.S.A. 39:4-50. Therefore, as applied, the statute is vague and violates the fourteenth amendment.

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14. See PA-123 and N.J.S.A. 39:4-50. See also N.J.S.A. 39:4-50.1.

15. What the N.J. Supreme Court fails to realize, but will no doubt preclude the petitioner/defendant from proving, is that the breathalyzer machine makes the same improper calculation whether you call it breath or blood. This calculation must still be considered "worthless for forensic purposes."

The machine has not changed simply because the New Jersey Supreme Court wishes the reality of the overestimation to go away.

3. DOES N.J.S.A. 39:4-50 AS INTERPRETED BY THE NEW JERSEY SUPREME COURT, WHERE ADMITTEDLY 2.3% OF THE POPULACE IS TREATED DIFFERENTLY, THEN THE REST OF THE POPULATION, BECAUSE OF THEIR BODIES, VIOLATE THE EQUAL PROTECTION CLAUSE OF THE FOURTEENTH AND FIFTH AMENDMENT?

Yes. In the present case the New Jersey Supreme Court has effectively ruled that trial courts may convict innocent people, but so what, the breathalyzer benefits most people who may be guilty.

In the remand hearing the factfinder concluded that the 2100 to 1 ratio was "worthless for forensic purposes" when looking at the entire population. The evidence presented by both sides indicates that the 2100 to 1 ratio overestimates one's true reading during the absorptive phase of the alcohol assimilation. A significant percentage of the population is being penalized by the same machine that is giving another segment of the population an advantage. The discrimination is based solely on ones individual body physiology at the exact time one is forced to submit to a breathalyzer.

In *McCleskey v Kemp*, 481 US 279, 292, 95 L Ed 2d 262, 278 (1987) this Court held it is the petitioners'/defendants' burden to prove "the existence of purposeful discrimination" and that the discrimination "had a discriminatory effect" on him.

The statistical data must be viewed in the context of this challenge. In the present case the New Jersey Supreme Court alleges that only 2.3% of the population is seriously overestimated. However, the New Jersey Supreme Court discounts Doctor Simpson's testimony because Doctor Simpson did not do any independent research, but rather relied solely and primarily upon the

foremost expert in the field, Doctor Dubowski. However, in the next breath the New Jersey Supreme Court concludes that Doctor Dubowski's research is the most reliable. 16

Petitioners assert that Doctor Simpson is the only expert presented who offers a statistical, scientific method, of the error present from the use of the breathalyzer. All other researchers only rely upon the actual subjects tested. Doctor Simpson attempts to apply this alleged average of 2100 to 1 to the population as a whole.<sup>17</sup> The State of New Jersey presented no rebuttal evidence of such error analysis.

Doctor Simpson's conclusions reflect a deviation much greater than the New Jersey Supreme Court would like us to believe.

Petitioners assert that, even with the 2.3 percent of the population being treated differently than the other 97.7 percent, the State is invidiously discriminating against that 2.3 percent. And this figure may be as high as 15 to 70 percent of the population, according to Doctor Simpson.

Petitioners have proved "purposeful discrimination." The State intends to offer these breath results against the petitioners at trial. Therefore, the State knows the problems and intends on making use of the discriminatory evidence.

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16. See PA-8 where the New Jersey Supreme Court relies upon Doctor Dubowski as the "most impressive expert."

The petitioners find this assertion to be a little absurd, since Doctor Simpson testified in the remand that his research relied upon "at least 100 research papers."

17. See PA-206 to PA-208 for the method which Doctor Simpson used in his error analysis.

However, petitioners admit there is a problem with the second part of this Court's test, because it is impossible to apply the discrimination specifically to petitioners. But, the State cannot prove that petitioners were not less than 2100 to 1 during the breath test. Petitioners rely solely upon the concept of due process and fundamental fairness in the context of this *per se* statute. Petitioners assert that this Court must determine this issue within the context of a *per se* application of the Statute. Thus, once a *prima facia* case of purposeful discrimination is made out, the burden should shift to the State of New Jersey to prove that petitioners are not discriminated against.

Petitioners assert that the analysis that this Court employ, in this case, should be akin to the analysis employed in grand jury proceedings. See *Castaneda v Partida*, 430 US 482, 493, 51 L Ed 2d 498, 509 (1977). Thus, once petitioners establish that petitioners' identifiable group is recognizable, and petitioners' group, through statistical data, is treated differently, there is a presumption created of discrimination. And the burden shifts to the State.

The State must prove that petitioners are not mistreated compared with the rest of the population. If the State fails, then petitioners assert that the application of the *per se* statute must also fail.

Petitioners assert that the State of New Jersey, based on the remand, cannot prove that petitioners were properly treated. Therefore, the use of discriminatory breath tests in the context of a *per se* statute, using the methodology presently employed, causes N.J.S.A. 39:4-50 to violate the equal protection clause of the fourteenth and fifth amendments.

4. DOES THE NEW JERSEY SUPREME COURT'S DETERMINATION IN IT'S MARCH 23, 1989 ORDER, VIOLATE THE PETITIONERS' PROCEDURAL DUE PROCESS AND SIXTH AMENDMENT CONSTITUTIONAL RIGHT TO A HEARING AND TO DEFEND HIMSELF?

Yes. In the present case, the New Jersey Supreme Court granted the petitioners their rights to an adversarial inquiry regarding the breathalyzer. However, the Supreme Court failed to provide the defendants an opportunity, pursuant to R. 8, to provide the Hearing Court with all the issues which should be determined by the hearing ordered.<sup>18</sup>

Procedural Due Process includes not only protection for the State but must also protect the defendant and his right to bring all issues before the Court, which may present a defense to the charges alleged. "It goes without saying that the requirements of a fair hearing include notice of the claims of the opposing party and an opportunity to meet them." *Federal Trade Commission v National Lead Company, et al.*, 352 US 419, 427; 1 L Ed 2d 438, 444 (1957). In the present case, the New Jersey Supreme Court mandated certain issues be heard on remand. Unfortunately, the Court by its actions, precludes the defendant from bringing forward all issues which were intended from the start.

The Supreme Court was never properly informed pursuant to a proper pretrial hearing, as provided in the Rules of Court, regarding the issues which petitioners intended to present. This occurred because the State interfered, before the issues to be briefed were due.

The State sought to prevent the adversarial inquiry

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18. See March 23, 1989 order at PA-106.

before the trial court's determination of the issues. It was improper for the New Jersey Supreme Court to reach out and determine which issues the defendant may present. The Court never inquired regarding the specific issues the petitioners sought to produce. The New Jersey Supreme Court's ruling enables only the Supreme Court of New Jersey to determine how the defendant should present a defense.<sup>19</sup> This conclusion violates the defendant's due process and sixth amendment rights to a fair hearing.

"What the Fourteenth Amendment does require, however, 'is an opportunity . . . granted at a meaningful time and in a meaningful manner,' (citations omitted) 'for (a) hearing appropriate to the nature of the case.'" *Logan v Zimmerman Brush Co.*, 455 US 422, 437; 71 L Ed 2d 265, 279 (1982). "The right of the accused in a criminal trial to due process is, in essence, the right to a fair opportunity to defend against the State's accusations." *Chambers v Mississippi*, 410 US 284, 294, 35 L Ed 2d 297, 308 (1973).

This Court broadly defines due process requirements. In the present case the defendant faces the State's threat to take money in the form of fines, costs, and surcharges, and to take away the privilege to drive, and the threat of taking one's liberty.

The Fourteenth Amendment draws no bright lines around three-day, 10-day, or 50-day deprivations of property. Any significant taking of property by the State is within the purview of the Due Process Clause. While the length and consequent severity of a deprivation may be another factor to weigh in determining the appropriate form of hearing, it is not decisive of the basic right to a prior hearing of some

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19. See point 1. above.

kind. *Fuentes v Shevin*, 407 US 67, 86; 32 L Ed 2d 556, 573 (1972).

The requirement of the right to be heard in a meaningful manner raises no impenetrable barrier in the State of New Jersey's constant drive to facilitate easy convictions of citizens charged with violating N.J.S.A. 39:4-50. This Court applies a balancing test regarding the right to be heard in a civil context. Under this test the nature of the case and the importance of the interests involved is one consideration which must be balanced against valid governmental interests. *Fuentes v Shevin*, *supra*. 407 US at 571.

The nature of the present case is a criminal proceeding. The importance of the issue involved is enormous because proofs from the breathalyzer can constitute the sole means of convicting a citizen. Serious questions surround the applicability of the breath test result to any particular person. As well as concerns with the scientific communities condemnation of the use of a breathalyzer in a *per se* statute.

Also, there are serious questions surrounding the reliability of the machinery employed. Considering all of the above together, a valid question arises regarding the proofs the State must present, for a violation of the *per se* section of N.J.S.A. 39:4-50. Finally, one must consider the importance given to any breath test reading after weighing the above.

This right to inquire is not absolute, "[b]ut its denial or significant diminution calls into question the ultimate "integrity of the fact-finding process" and requires that the competing interest be closely examined. *Berger v California*, 393 US 314, 21 L Ed 2d 508 (1969).

In the present case, the Appellate Court ordered an absolute exclusion of evidence regarding the admissibility and reliability of breath test results. *State v Downie, et al.*, *Supra*. 229 NJ Super at 213 at PA-28.

In *Rock v Arkansas*, 483 US , 97 L Ed 2d 37 (1987) this Court discussed the Fourteenth Amendment in the context of a *per se* prohibition of admission of evidence.

In *Rock*, the defendant could not remember certain aspects of her activities related to her Manslaughter charge. The defendant placed herself under hypnosis in order to help her recall her activities.

Under hypnosis the defendant recalled that she did not place her finger on the trigger of the gun but rather the gun went off accidentally after her husband grabbed her arm. Based on these new facts the gun was tested. It was determined that the gun's trigger mechanism was defective. The gun was prone to fire without pulling the trigger, if the gun was dropped or hit. *Rock v Arkansas*, 483 US at , 97 L Ed 2d at 37.

The defendant was not allowed to testify about her new memories in the trial court. The defendant could only testify about her prehypnotic memories. The trial court's ruling was based on the State's *per se* exclusion of hypnotic evidence.

This Court framed the issue in this context, "[w]hether a criminal defendant's right to testify may be restricted by a state rule that excludes her post-hypnotic testimony?"

In the present case, the issue may be framed, whether the New Jersey Supreme Court may impose a *per se* rule excluding relevant, material exculpatory evidence from being heard? This Court held that *per se* exclusion of evidence is detrimental to the defendant and violates due process. *Rock v Arkansas*, 483 US at , 97 L Ed 2d at 49.

In footnote 12 this Court stated,

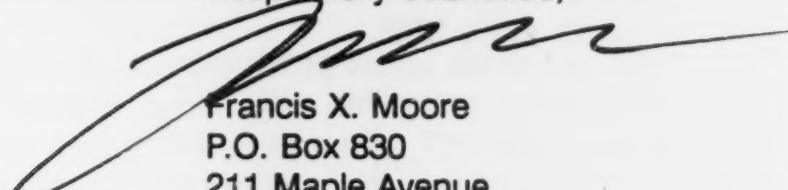
The rule [*per se* exclusion of evidence] leaves a trial judge no discretion to admit this testimony, even if the judge is persuaded of its reliability by testimony at a pretrial hearing. *Rock v Arkansas*, 483 US at , 97 L Ed 2d at 49.

The logical question is what is the New Jersey Supreme Court's fear? After all, a full pretrial hearing serves the interests of both parties, not just the defendants/petitioners. A prosecutor's job is to see that justice is done not merely to facilitate the convictions of the State's citizens. See PA-49. See also Disciplinary Rule 7-103(B), Supp June, 1978.

## CONCLUSION

For the above reasons, petitioners assert that this is a case of first impression before this Court. Petitioners assert the record created by the remand in the within case presents facts never before assembled in one case. Moreover, based on the facts and the *per se* nature of the machine and evidence involved, (which may work to remove the factfinder from the process), this Court should determine the serious issues raised and ignored by the New Jersey Supreme Court.

Respectfully Submitted,



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**IN THE**  
**SUPREME COURT OF THE UNITED STATES**  
**October Term, 1989**

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**ANDREW DOWNIE,**

**DANIEL MATTHEWS,**

**MARTIN MAROTTA,**

**CHARLES CARROLL; Petitioners,**

**vs**

**STATE OF NEW JERSEY; Respondent.**

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**PETITIONER'S APPENDIX**

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STATE OF NEW JERSEY, PLAINTIFF-RESPONDENT,  
v. ANDREW DOWNIE, DANIEL MATTHEWS, MAR-  
TIN J. MAROTTA, AND CHARLES F. CARROLL,  
DEFENDANTS-APPELLANTS.

Argued February 27, 1989 --- Remanded  
March 23, 1989.

Reargued October 23, 1989 --- Decided  
January 31, 1990.

### SYNOPSIS

During unrelated drunk driving prosecutions in various municipal districts, before same judge and where defendants were represented by same attorney, the Superior Court, Law Division, Monmouth County, permitted municipal court judge to hear arguments relating to admissibility of breathalyzer evidence. State appealed. The Superior Court, Appellate Division, 229 N.J.Super 207, reversed and remanded. Defendants appealed. The Supreme Court, Garibaldi, J., held that courts would continue to take judicial notice of reliability of breathalyzer evidence of per se violations of driving while intoxicated statute.

Affirmed.

Stein, J., dissented and filed opinion.

#### 1. Criminal Law 304(1)

Courts shall take judicial notice of the general reliability of breathalyzer tests in establishing per se violation of driving while intoxicated statute. N.J.S.A. 39:4-50(a).

#### 2. Automobiles 411

Defendants in driving while intoxicated cases are not permitted to challenge blood alcohol determinations made

by breathalyzer by taking results and extrapolating to produce estimate of content at time of arrest. N.J.S.A. 39:4-50(a).

*Francis X. Moore* argued the cause for appellants (*Francis X. Moore*, attorney; *Michael R. Speck*, on the brief).

*Mark P. Stalford*, Assistant Prosecutor, argued the cause for respondent (*John Kaye*, Monmouth County Prosecutor, attorney).

*Boris Moczula*, Deputy Attorney General, argued the cause for *amicus curiae* Attorney General of New Jersey (*Peter N. Perretti, Jr.*, Attorney General, attorney).

*E. John Wherry, Jr.*, submitted briefs on behalf of *amicus curiae* National Association of Criminal Defense Lawyers (*Voorhees, Bennet & Wherry*, attorneys).

The opinion of the Court was delivered by

GARIBALDI, J.

This appeal involves yet another challenge to the scientific reliability of breathalyzers by defendants charged under N.J.S.A. 39:4-50. Specifically, defendants challenge the accuracy of the breathalyzer test results based on partition --- ratio variability.

Defendants are charged with violating N.J.S.A. 39:4-50(a), which makes it unlawful for a person to operate "a motor vehicle with a blood alcohol concentration of 0.10% or more by weight of alcohol in the defendant's blood...". This provision enacted by 1983 amendment

defines the *per se* violation of driving while intoxicated. ("DWI"). The breathalyzer, the machine the State employs to ascertain blood alcohol, measures the amount of alcohol in the breath and multiplies that by 2100 to arrive at the level of alcohol in the arterial blood supplying alcohol to the brain. This 2100:1 partition ratio presumes that every 2.1 liters (2100 milliliters) of expired alveolar air (air expired in the last 1/3 portion of a deep breath) contains approximately the same quantity of alcohol as one milliliter of blood. If a person's actual blood-breath ratio is lower than 2100:1, the breathalyzer will overestimate blood alcohol, and vice-versa.

Defendants assert that because people have broadly divergent ratios of breath alcohol relative to blood alcohol, the 2100:1 partition ratio is inaccurate and the breathalyzer-test results premised on that partition ratio are scientifically unreliable.

We reject this challenge to the breathalyzer, and continue to deny admissibility of extrapolation evidence to refute the breathalyzer's results. We find that breathalyzer testing is a practical and reasonably accurate way of fulfilling the Legislature's intent to punish drunk drivers.

1

#### A. Background Procedural History and Facts

Downie sought a pretrial, pursuant to *Rule 3:13-1(b)*, in order to present expert testimony regarding the scientific unreliability of breathalyzer-test results. To economize on the costs of presenting that testimony, Downie moved

to consolidate his case with the drunk-driving cases of three other defendants also represented by his attorney. The other defendants are Mr. Matthews, Mr Marotta and Mr. Carroll. The cases arose in four different municipalities, all served by the same municipal court judge, who consolidated the four actions with regard to common questions of law and fact and granted a pre-trial conference.

The Monmouth County Prosecutor filed a motion to appeal *nunc pro tunc* the municipal court's consolidation order. The Law Division found that consolidation was improper but permitted the municipal courts to consider evidence regarding the admissibility and competency of breathalyzer-test results. The State appealed from the Law Division's Order.

The Appellate Division, relying on this Court's order in *Romano v. Kimmelman*, 96 N.J. 66 (1984), that judicial notice "shall" be taken of the scientific reliability of breathalyzers, subject to few limited exceptions not at issue in this case<sup>1</sup>, reversed the Law Division and held that evidence regarding the scientific reliability and accuracy of the breathalyzer-test results based on partition-ratio variability was inadmissible. 229 N.J.Super. 207.

<sup>1</sup>The Romano Order states that judicial notice "shall" be taken of the scientific reliability of breathalyzers, with freedom from radio frequency interference being the only qualification, and with the only issues subject of proof being the working nature of the particular machine, the qualification of the operator, and the method of administration of the test. None of these issues are in question on this appeal. No defendant alleges any fault in the operation of the breathalyzer used in his case, but all challenge the accuracy of the partition ratio.

The Appellate Division considered this Court's decisions in *State v. Tischio*, 107 N.J. 504, 506 (1987), *app.dism.*, 484 U.S. 1038, 108 S.Ct. 768, 98 L.Ed.2d 855 (1988) (N.J.S.A. 39:4-50 mandates a conviction for DWI based solely on the breathalyzer reading in excess of .10% taken within reasonable time of arrest even if reading at time of operation would have been lower), and *State v. Johnson*, 42 N.J. 146, 171 (1964) (testimony disputing the accuracy of the breathalyzer device has negligible probative value in the present state of knowledge of the scientific and medical community), as reflecting this Court's strong belief in the accuracy and reliability of the breathalyzer.

The Appellate Division also decided that the Monmouth County Prosecutor had standing to represent the State, 229 N.J.Super. at 209 n. 1, and that the Municipal Court lacked authority to consolidate cases in different municipal courts. *Id.* at 210 n.

2. On the other hand, the court found no impediment to the presentation of common proof or argument on similar matters pending before the same court in more than one jurisdiction in the interest of judicial economy. *Ibid.*

This Court granted the defendants' motion for leave to appeal and the Attorney General's motion for leave to appeal as *amicus curiae*.

#### B. Factual Record on Limited Remand

This Court remanded the four consolidated cases to the Law Division for a hearing, at which the defendants and the State were instructed to present "evidence to develop a factual record on the allegation that partition

ratio variability compromises the scientific reliability of breathalyzer test results (and) which hearing shall address the following issues. One: The nature and extent of the variability of the partition ratio. And, two, the effect, if any, of such variability of the partition ratio on the reliability of breathalyzer test results."

The experts who testified before the trial court were Drs. Borkenstein, Hlastala, Payne, Jones, Dubowski, and Simpson, Messrs. Shajani, Lucas, and Harding, and Sgt. Gulburg. Dr. Borkenstein, who invented the breathalyzer, commented on its scientific reliability. Dr. Hlastala outlined potential physical variables that could affect the blood-breath partition ratio. Drs. Jones, Dubowski, and Payne commented on their blood-breath experimental studies. Messrs. Shajani and Lucas, Harding and Sgt. Guillberg explored their own field work and laboratory studies. Dr. Simpson analyzed the works of others from a statistical perspective, but presented no experimental or field work of his own.

After hearing the experts' interpretation of the physiological data, the lower court found the seven following conclusions of fact:<sup>2</sup>

1. The breathalyzer, Models 900A, is a scientifically reliable and accurate device for measurement of the alcohol content of a person's breath (assuming proper functioning of the instrument and a qualified operator).

<sup>2</sup>The trial court also prepared a synopsis of each expert's testimony and a written overview of the issue, including a detailed description of the basic theory of the blood/breath ratio.

2. In converting at a ratio of 1 to 2100 the breath-alcohol concentration present in the person's blood, the breathalyzer reading is not scientifically accurate.
3. Calculated blood-breath ratios are worthless for forensic purposes. They are subject to so many variables as to be unuseable except for gross estimates of a person's true lung partition ratio, and then only at a particular moment. (Borkenstein, Dubowski, Payne, Jones, Lucas).
4. In a persecution for drunk driving, the breathalyzer calibrated at 2100 to 1 is biased in favor of the accused. (A) It under-reads the average person's (blood alcohol) by some 9% or 10%, compared to a venous whole-blood sample that might be simultaneously taken. (B) Its truncated readings give the accused the benefit of anywhere from .001% to .009% on a given test reading. (C) The start line set on the breathalyzer scale gives the subject the benefit of another .003% on any test reading. (All experts agree on the foregoing.) (D) The lower value of two consecutive readings taken fifteen minutes apart is used for proof.
5. The breathalyzer gives a correct reading of alcohol in the breath at a particular moment. It does not distinguish between pre-peak "absorptive" or post-peak "post-absorptive" stages in the intake and elimination of alcohol in the blood. Those terms are of value only to the scientist.
6. The breathalyzer does not overestimate alcohol in the blood at the .10% level to the detriment of the accused. That is clearly so in the post-peak stage. In the pre-peak stage. In the pre-peak stage the breathalyzer reading is more accurate in predicting the amount of alcohol affecting

the brain than is a venous blood sample and it cannot be empirically demonstrated that it is in error, so long as two breath readings are taken within fifteen minutes of each other, do not differ by more than .10%, and the lower of the two is used for proof purposes. (Jones, Shajoni, Dubowski, Lucas).

7. For the breathalyzer to give readings that can be used with confidence, the operator must be sure that at least twenty minutes have expired since the last ingestion of alcohol to avoid the presence of "mouth" alcohol, which can give a falsely high reading.

The parties *amici* filed exceptions to the trial court's Conclusions of Fact.<sup>3</sup> The Monmouth County Prosecutor's Office as well as the Attorney General generally agree with the trial court's findings. Their exceptions relate primarily to their concern that the conclusions of fact are so terse and brief that without further explanation they will be misinterpreted.

Accordingly, the Attorney General suggests that Conclusions of Fact #2 and 3 be expanded to read as follows:

#### **Finding #2**

2. The breathalyzer is calibrated at a breath/blood conversion ratio of 1 to 2100 in determining the amount of alcohol in an individual's system. Use of a 1 to 2100

<sup>3</sup>The Offices of the Monmouth County Prosecutor and the Attorney General submitted exceptions. The Attorney General's Office also submitted Proposed Findings of Fact. The attorney for the defendants submitted exceptions and Proposed Findings of Fact in which Amicus Curiae, National Association of Criminal Trial Lawyers (NACTL), joined.

ratio in the conversion of measured breath alcohol concentration to venous blood alcohol concentration is scientifically inaccurate in that it results in an underestimation of venous blood alcohol concentration. The more scientifically acceptable conversion ratio is 1 to 2300. However, the forensic scientific community, aware that a 1 to 2300. However, the forensic scientific community, aware that a 1 to 2100 ratio benefits a defendant, has retained this ratio for law enforcement purposes.

and that the following sentences be added to Finding #3:

For this reason, a comparison of the actual differences between breath test and venous blood test results is the only valid form of analysis of the accuracy of breath testing instruments calibrated at a 2100:1 ratio to determine venous blood alcohol concentration. Reliable empirical evidence demonstrates that these actual differences are very small.

We agree with the Attorney General that the suggested versions of conclusions of fact #2 and 3 are helpful in understanding the Law Division's findings of fact.

Defendants allege that the Court can consider only conclusions of fact #2 and #2, and that we are constitutionally precluded from considering conclusions of fact #1,4,5,6, and 7, because they were outside the scope of the remand and the defense did not have a fair opportunity to present its side of those issues. We find no merit in that position. The conclusions of fact are based on the experts' testimony and address the two issues the Court specifically directed the Law Division to consider

on its remand. Aside from a specific exception to conclusion #6, the defense exceptions are not related to any specific conclusions of fact but consist instead of general allegations that the Legislature's intent was to base DWI convictions on the blood-alcohol level of the driver and that the Law Division "erroneously concluded that the breathalyzer does not overestimate alcohol in the blood to the detriment of the accused."

II

(1) Based on our examination of the voluminous scientific evidence and the exceptions and proposed findings of fact filed by the parties and *amici*, we agree with the trial court's conclusions of fact.

As the evidence demonstrates, the use of the partition ratio has been the subject of discussion and debate in the scientific community for years. Scientists have performed many studies, stemming from as far back as 1930, to determine the various factors that might affect the range of the partition-ratio variability. Hence, we find no merit to the defense's contention that the variability of the partition ratio represents a new scientific development.

Experts generally agreed on the physiological process triggered by the ingestion of alcohol. A relatively small percentage of ethyl alcohol (the alcohol contained in alcoholic beverages) is absorbed directly through the stomach into the blood that carries it to the brain. The remaining alcohol is absorbed more slowly through the intestinal tract. The alcohol reaches the brain via the carotid arteries. The amount of alcohol present in the water in the brain

is what affects the driver's ability to operate a motor vehicle. After passing through the brain, the blood travels back through the venous system to the liver, the heart and back into the arterial system and lungs. The liver metabolizes the alcohol. Once absorbed, the alcohol will continue to affect the brain until it is completely metabolized.

The body undergoes at least two metabolic phases following the ingestion of alcohol. The absorptive (pre-peak) phase lasts from the initial ingestion of an alcoholic drink to the point of the peak-alcohol blood level. The rate of absorption depends on variables such as the amount of food in the stomach, the amount of pure alcohol ingested, and the rate of drinking. That initial phase is followed by the post-absorptive (post-peak) phase, which witnesses a decline in alcohol-blood levels.

During the post-absorptive phase, most experts agree that venous blood, arterial blood, and breath are all good indicators of the amount of alcohol in the brain. During the absorptive phase, however, arterial blood, which takes the alcohol to the brain, is the most accurate measure of alcohol in the brain. Venous blood may underestimate the amount of alcohol in the brain during the absorptive period because it does not circulate close to the brain and is entirely dependent on the amount of alcohol derived from the intestines. Thus, during the absorption period arterial blood may reflect a much higher percentage of alcohol than venous blood.

Ideally, arterial blood, drawn from the carotid artery, would furnish the most accurate estimate of alcohol in the brain. Yet, a complicated, painful, and potentially dangerous procedure is necessary to draw arterial blood.

The arterial blood does carry the alcohol to the lungs where it diffuses into the alveolar air space and is exhaled in the breath. Because of that, many experts consider alveolar air, or air expelled from the lungs at the end of a deep breath, as the best practical measure of alcohol in the brain during the absorptive phase. Capillary blood, drawn from the fingertip and emanating from the shunt between the arterial and venous systems, is also a sound measurement of alcohol during the absorptive phase.

For law enforcement purposes, the drawing of capillary blood and venous blood are a more intrusive and burdensome test than the breathalyzer. They require puncturing the body of a suspected drunk driver by experienced medical personnel who can and must take meticulous care that blood samples not become contaminated. Capillary blood drawn from the fingertip is small in amount and the alcohol it contains easily evaporates when exposed to the air. Extraction of venous blood, while not posing a problem with evaporation, is an invasive procedure requiring trained medical personnel. Moreover, venous blood is unreliable in reading the amount of alcohol affecting the brain during the absorptive phase.

In contrast, the breathalyzer may be administered by a trained police officer, and requires only that the suspect exhale deeply into the machine. Assuming the machine is in working order and the test is properly administered, all experts agree the breathalyzer can read the amount of alcohol in the breath with a great deal of accuracy. The operative inquiry is then whether the breathalyzer may overestimate blood alcohol to the extent that some drivers would be erroneously convicted.

The 2100:1 partition ratio, in its absolute simplicity belies the fact that each subject's partition ratio is affected by a host of complex physiological variables. Henry's law, in physical chemistry, states that when a liquid that contains a volatile substance, such as alcohol, makes contact with air in a closed container and at a known temperature, a certain amount of alcohol will escape into the air space above in the form of vapor. The rate at which the alcohol vaporizes will depend on the concentration of the alcohol in the liquid and on the temperature. The higher the temperature, the more alcohol will escape to the vapor. When there is a fixed temperature and concentration of alcohol, a state of equilibrium will result in which the amounts of alcohol in air and liquid are static.

The breathalyzer applies Henry's law to the blood which courses through the lungs carrying alcohol. As the arterial blood passes through the lungs, some of the alcohol will become vaporized in the alveolar air and expelled in the breath. The breathalyzer is calibrated to presume that at 34° Celsius, a solution of 121 grams of alcohol per 100 milliliters of water will give off alcohol to the vapor of .10 grams per 210 liters of vapor. Thus, we arrive at the current 2100:1 partition ratio.

Dr. Dubowski found that individual partition ratios vary greatly. In one experiment, Dubowski paired blood and breath samples from experimental subjects. He found that the partition ratio of samples from different people ranged from 1706:1 to a high of 3063:1 despite each having ingested the same amount of alcohol. A person's partition ratio may vary from time to time. Moreover, it may be that no two people have the exact same partition ratio. Thus, the 2100:1 partition ratio is merely an estimate that

roughly approximates most people's ratio and that is calibrated to give the benefit of the doubt to the subject in most instances.

Expert witnesses generally agreed that the breathalyzer, using a 2100:1 partition ratio, will usually underestimate the amount of alcohol in the blood. That is due to a variety of factors. First, most people's partition ratios may be closer to 2300:1 than to 2100:1. Second, the breathalyzer results are truncated, or the third decimal position is dropped when read. If a person reads .099 on the breathalyzer, the results will be shortened to read .09, thereby underestimating the breath alcohol. Third, a suspect may not provide enough deep breath to register all of the alcohol present in the alveolar air. Fourth, the breathalyzer's scale is set .003 below the start line and this gives suspects an added benefit. Finally, under current procedures, law-enforcement officials will count only the lower of two breathalyzer results, obtained fifteen minutes apart, as evidence against a suspect. These, among other less-significant factors, cause the breathalyzer to render many more results on the low side than on the high side.

Dr. Borkenstein testified that a 2300:1 partition ratio would probably result in more accurate breathalyzer readings. He estimated that 9% of those who take the breathalyzer test receive lower readings of alcohol in their blood than are accurate. In contrast, he estimated that only three persons in a thousand might be convicted as a result of an erroneously-high breathalyzer reading. He adduced that breathalyzer researchers and members of the National Safety Council adopted the 2100:1 partition ratio instead of the more accurate 2300:1 ratio because

they wanted to err on the low side and have almost no errors on the high side.

Dr. Borkenstein's statements were echoed by almost all the witnesses. Mr. Harding estimated that the breathalyzer readings were, on average, 11% lower than the alcohol present in the blood. Dr. Jones, who conducted in-depth empirical studies for Sweden, indicated that 1.8% of the population has a partition ratio of less than 2100, while 98.2% have a higher partition ratio in the post-absorptive phase. Dr. Payne estimated the mean partition ratio to be 2271:1. In a study he conducted in 1966, he had estimated an even higher partition ratio of 2470:1.

The trial court found Dr. Dubowski to be the most impressive expert witness. Likewise, prior New Jersey courts have relied on Dr. Dubowski, recognizing him to be a leading authority on the scientific reliability of the breathalyzer. *State v. McGinley*, 229 N.J.Super. 191, 200 (Law Div.1988) (cited in *State v. Dovnie, supra.* 229 N.J.Super. at 211). Therefore, it is essential to dispel any prior misconceptions of his scientific position. In *McGinley*, the trial court stated that according to Dr. Dubowski there was a 14% overestimation and that "every breathalyzer reading should be reduced by .055%." The Appellate Division in this case also relied on this mistaken reading of Dr. Dubowski's position. 229 N.J. at 211.

At the remand hearings, Dr. Dubowski stated that he never testified that .055 should be deducted from each breathalyzer result. Moreover, with respect to the 14% overestimation figure he said that at the time he testified at a trial in Alaska on which the *McGinley* court relied, he did not have the statistical data analysis he now has

and that his previous simplified testimony does not fairly and correctly reflect the facts.

Dr. Dubowski also testified that the breathalyzer underestimates blood alcohol much more frequently than it overestimates it but is generally highly accurate in reading breath-alcohol content. He based his conclusion in part on the results of a study in which he compared the results obtained using the breathalyzer with results obtained using sophisticated laboratory equipment in 709 pairs of breath samples.

In another study of subjects in the post-absorptive phase, involving 388 paired venous blood/breath samples, Dr. Dubowski found that in 86% of cases, the breathalyzer underestimates the blood-alcohol level. In 14% of the cases, it did not underestimate the blood-alcohol level. Of that 14%, in 2.3% of cases the breathalyzer states exactly the blood-alcohol content. In 9.4% of the cases, the breathalyzer overestimates the blood-alcohol level at the third decimal level, where it has no impact on the subject's breathalyzer reading. In only 2.3% cases does the breathalyzer materially overestimate the blood-alcohol level potentially to the detriment of the accused. Even the 2.3% figure is subject to question inasmuch as it involves separate pairs from the same subject. It is not established that 2.3% of the people would have a higher breathalyzer reading than the actual percentage of alcohol in their blood.

Still, despite the evidence that the breathalyzer could potentially wrongfully convict less than 2.4% of suspected drunk drivers, some scientists still pose objections to the test based on the infinite physical factors that affect the

blood-breath ratio. Biological factors such as mouth temperature, gender, body temperature, medication, menstrual cycle, and oral contraceptives may have some theoretical effect on breathalyzer readings. In addition, hematocrit, or the ratio of the volume of blood cells to the total volume of blood, expressed as percentage, may have some theoretical effect. Women have generally lower hematocrit meaning a lower percentage of their blood is comprised of cells, and therefore a higher percentage is comprised of water. No scientist during the remand hearing could establish that these theoretical effects were sufficiently concrete as to be significant. Moreover, these factors would not always inflate breathalyzer readings. Even defense witnesses admitted that some of these factors would actually lower breathalyzer readings.

### III

Our review of the record on remand is in conformity with the conclusions of fact determined by the trial court. We are satisfied that the breathalyzer is a reliable and indispensable tool for law-enforcement purposes.

It is important to note the legislature's statutory pronouncement on drunk driving. *N.J.S.A. 39:4-59(a)* states that "(a) person who...operates a motor vehicle with a blood alcohol concentration of 0.10% or more by weight of alcohol in the defendant's blood" is guilty and subject to punishment. *N.J.S.A. 39:4-50.2* states that drivers on public roads consent to the taking of breath samples for the purpose of ascertaining their blood-alcohol levels (provided the test is administered according to statutory standards). Finally, *N.J.S.A. 39:4-50.3* provides that the

Attorney General has the authority to promulgate breath-testing procedures and standards governing the qualifications and competence of those who administer the test.

Those statutory pronouncements give rise to certain ambiguities. *N.J.S.A. 39:4-50(a)* refers to .10% as measured by the weight of alcohol in the defendant's blood. It does not explicitly refer to a particular measure of alcohol in the breath as constituting the *per se* infraction of drunk driving. *N.J.S.A. 39:4-50.2*, the "implied consent" statute, does refer to breath samples explicitly, but also mentions the ascertaining of blood-alcohol levels as the ultimate purpose of breath testing. The statutes give rise to the ambiguity of whether a .10% breathalyzer reading was intended to be sufficient to convict someone, even when the breathalyzer may have a maximum 2.3% chance of overestimating blood alcohol.

It is an accepted principle of statutory construction that an ambiguous statute should be interpreted in light of the statutory purpose. *Accountemps Div. of Robert Half of Philadelphia, Inc. v. Birch Tree Group, Ltd.*, 115 N.J. 614 (1989); *Horwitz v. Reichenstein*, 15 N.J. 6,8 (1954); *In re Petition of Battle*, 190 N.J.Super. 232, 236 (App.Div.1983). We must search for indications of legislative intent or for the inferences that may be drawn from the structure and purpose of the statute. *State v. Maguire*, 84 N.J. 508, 514 (1980) ("In resolving...questions of statutory construction, we are mindful that our task is to effectuate the legislative intent in light of the language used and the objects sought to be achieved."). Moreover, we should make reference to legislative history not only where statutory language is ambiguous but also where literal interpretation would thwart the overall statutory

scheme. *State v. Tischio*, 107 N.J. 504, 509 (1987), app. dism. 484 U.S. 1038, 108 S.Ct. 768, 98 L.Ed.2d 855 (1988); *Exxon Corp. v. Hunt*, 97 N.J. 526 (1984).

The legislative hearings on N.J.S.A. 39:4-50.2 provide some insight into whether it is reasonable to assume that the statute's mention of breath was an acknowledgement by the legislature that breath, not blood, would be the final measure of intoxication. The then-Attorney General, Arthur J. Sills, told the Senate Committee on Law and Public Safety that inebriation would be ascertained through "the use of a breath test." *Public Hearings on Senate Bill No. 8 (Driving While Impaired) and Senate Bill No. 9 (Implied Consent)*, February 28, 1966, at 39. In addition, the Attorney General commented on how there had been a process of "gradual acceptance of chemical test laws which provide statutory standards for interpreting the results of chemical tests performed on persons charged with the offense of driving while under the influence of intoxicating liquor." *Id.* at 32. The Attorney General's statements attest to the acceptance, progressive over time, of the breathalyzer as the ideal chemical measurement of degree of inebriation.

Others who testified before the Senate Committee echoed the Attorney General's reliance on the breathalyzer. The Director of the Division of Motor Vehicles spoke of scientific testing as being definitive of the individual's level of impairment. *Id.* at 51. The president of the New Jersey Licensed Beverage Association referred to "the approximate number of cocktails one would need to consume" so that "the scientific reading to discover the alcohol content would be .10%." *Id.* at 31A. The then-Superintendent of the State Police summarized the tenor of the

hearings when he stated that the chemical test, or "drunkometer" (analogous to our present breathalyzer), "is the best method of separating the innocent from the guilty." *Id.* at 12A. Although chemical tests may refer to a broader class than just the breathalyzer pervaded the hearings. There was an assumption underlying the hearings that a breathalyzer reading of .10% should be sufficient to establish impairment.

New Jersey enacted the .10% *per se* law partly in response to federal standards and incentive programs. Legislative history reveals that those federal statutes also presumed the reliability of the breathalyzer. See Assemble Judiciary, Law, Public Safety and Defense Committee Statement to Senate Bill No. 1833, L.1983, c. 129; 23 U.S.C.A. Sec. 408, 23 C.F.R. Ch. 111, Part 1309; 3 U.S.Code Congressional and Administrative News, 97th Congress, Second Session (1982) 3367 at 3370. Thus, federal standards appear to have been formulated with the presumption that the breathalyzer would be one of the preferred measures of intoxication.

We have previously held the New Jersey statutory language to presume the validity of breathalyzer test results. In *State v. Tischio*, *supra*, 107 N.J. at 522, we held that "the statute prescribes an offense that is demonstrated solely by a reliable breathalyzer test administered within a reasonable period of time after the defendant is stopped..which test results in the proscribed blood alcohol level." (Emphasis added.) In *State v. Johnson*, 42 N.J. 146 (1964), and *Romano v. Kimmelman*, 96 N.J. 66(1984), we also declared our conviction in the accuracy and reliability of the breathalyzer.

In light of the scientific and legislative evidence, we find unpersuasive the argument that blood should be the sure and ultimate measure of inebriation. Blood, itself is not monolithic. Venous blood differs from the arterial blood, which actually takes alcohol to the brain. Venous blood may be far less accurate as an indication of the amount of alcohol affecting the brain than breath in the absorptive phase.<sup>4</sup> Given the fact that the legislature desired to bar driving while intoxicated, it appears logical that the blood contemplated was the arterial blood, which takes alcohol to the brain. Because arterial blood is practically unobtainable, then breath, not venous blood, is the most consistently accurate reflection of the concentration of alcohol affecting the brain. Thus, the legislative and judicial reference to "blood" is not an intended concession that blood tests are the preferred method for ascertaining inebriation. The dissent alleges that we are, in fact, converting a blood statute to a breath statute. *Post* at 470. Instead, we are reflecting the legislative intent that "blood," insofar as it refers to arterial blood, is best represented by breath samples.

Other states have acknowledged the breathalyzer to render results that are conclusive of the defendant's guilt or innocence. In *State v. Rucker*, 297 A.2d 400 (1972), the Delaware Supreme Court addressed the defendant's claim that possible error in breath testing might indicate that his blood-alcohol level was below the level proscribed by statute. The court rejected that claim, holding that

<sup>4</sup>Although it is recommended that people not be tested within twenty minutes after they ingest their last drink, the absorptive period may be much longer than twenty minutes in most individuals.

the test result, rather than the proscribed blood-alcohol level, was the essential element of the offense:

Under the terms of the statute the trier of fact must determine whether the test results show the required percentage of alcohol in the blood. The trier of fact is not free to disregard the mandate of the statute or to question the wisdom of the General Assembly in providing that test results constitute proof of that element of the crime.

The possible variance in results between various types of tests...may be an inherent weakness of the statutory provisions. The General Assembly could have considered these possible variances when it enacted the legislation but the legislation is so worded as to preclude these factors from being considered as issues of fact.

If there had been evidence that the test was improperly administered, such evidence could cast such doubt on the result as could be considered by the trier of fact in determining whether the statutory requirement had been met. But, as indicated, evidence that the type of tests already approved by the General Assembly when properly conducted are still subject to possible variations in results is not a matter which is here left to the trier of facts. (Id. at 402-03.)

In light of *Tischio* and other New Jersey precedent, the breathalyzer should receive similar deference in this state as in jurisdictions such as Delaware. See, e.g., *Cooley v. Municipality of Anchorage*, 649 P.2d 251, 254 (Alaska Ct.App.1982) (breathalyzer is accurate in vast majority of cases despite possible variations in converting breath-alcohol concentration to blood-alcohol concentration); *People v. Capporelli*, 148 Ill.App.3d 1048, 103 Ill.Dec. 864, 868, 502 N.E.2d 11, 15 (1986) (legislative provision that

breathalyzer is an available measure of intoxication is based on sufficient scientific data as to be rational); *Heddan v. Dirkswager*, 336 N.W.2d 54, 62 (Minn.1983) (breathalyzer, if administered correctly, is highly accurate); *State v. Brayman*, 110 Wash.2d 183, 751 P.2d 294 (1988) ("While the record may establish that breath is a less direct measure of blood-alcohol levels, it does not establish a lack of reasonable and substantial relationship between breath alcohol and impairment."). In many of these states a breath-alcohol reading of .10% is explicitly cited in the statutory language, without any reference to blood alcohol, as being sufficient evidence of the defendant's guilt, assuming the machine is operated correctly and is in good working order.

We believe that the legislature intended the breathalyzer to be a measure of inebriation and not just blood alcohol. It is not necessary for there to be "unanimity of opinion or universal infallibility...for judicial acceptance of generally recognized matters." *State v. Johnson*, *supra*, 42 N.J. at 181. Judicial notice serves "to provide a speedy and efficient means of proving matters which are not in genuine dispute." V. Biunno *Current N.J. Rules of Evidence*, Comment 1 to *Evid.R. 9* (quoting *RWB Newton Assocs. v. Gunn*, 224 N.J.Super. 704, 711 (App.Div 1988) (hereinafter Biunno). When a scientific device has been held to be reliable, it is no longer necessary for there to be expert testimony on that issue at every trial. *Biunno, supra*, Comment 12 to *Evid.R. 9*. We are convinced that as long as proper procedures are followed, the breathalyzer should remain a subject of judicial notice.

The breathalyzer reads alcohol with unimpeachable accuracy. Breath, in turn, is the best measure of alcohol

in the arterial blood, which feeds alcohol to the brain. The 2100:1 partition ratio does combine with other physiological factors to underestimate blood alcohol in a significant number of cases. This results, however, only in giving suspects an added benefit of the doubt. Every method of ascertaining blood alcohol carries inherent problems. No method is 100% accurate. We hold that the breathalyzer, with a maximum overestimation error margin of 2.3%, is not only the best practical tool, but the tool the legislature intended to carry out its will. *Romano v. Kimmelman, supra, 96 N.J. 66.*

We are confident that continued use of the breathalyzer will not lead to unjust convictions. The scientific evidence is more conclusive now than ever that the chances of overestimation are extraordinarily small. We must construe legislative intent in cases in which statutory language is ambiguous. The legislature wanted drunk drivers off the road. As a measure for determining a motor vehicle violation, a scientific test that produces predictably accurate results in 97.7% of the cases is not unreasonable. Because of this we also continue to reject the admissibility of extrapolation evidence. *Stat v. Tischio, supra, 107 N.J. 504.*

(2) In conclusion, we hold that the breathalyzer fulfills legislative policy and intent to provide a reliable and fair measure of alcohol in the brain. Breathalyzer results can continue to be used in prosecution of the *per se* offers of drunk driving. The reliability of breathalyzer results will continue to be the subject of judicial notice in drunk-driving prosecutions. Extrapolation evidence will also continue to be inadmissible.

The breathalyzer is unsurpassed in its combined practicality and usefulness. It errs on the low side in a significant number of cases, in order not to overestimate blood alcohol in the greatest possible number of cases. We are convinced this is justifiable in order to further the legislature's will and maintain efficiency in our system of justice.

The judgement of the Appellate Division is affirmed and the four matters are remanded to the municipal courts for separate trials to be held consistent with this opinion.

STEIN, J., dissenting.

The Court is afflicted with a severe case of institutional amnesia. It has either forgotten, or has unaccountably ignored, the most basic distinction between the legislative and judicial branches of government.

Underlying this litigation was the premise, acknowledged by all parties and this Court, that New Jersey's drunk-driving statute is based on blood-alcohol content. N.J.S.A. 39:4-50. The single issue was whether the breathalyzer, which measures *breath*-alcohol content, inaccurately converts breath alcohol to blood-alcohol content, inaccurately converts breath alcohol to blood alcohol because the conversion ratio at which the breathalyzer is calibrated exceeds the so-called partition ratio of a portion of the population. This Court ordered a remand hearing "to develop a factual record on the allegation that partition ratio variability compromises the specific reliability of breathalyzer-test results \*\*\*." 114 N.J. 498 (1989). Evidence adduced at the remand hearing demonstrates that the breathalyzer is highly reliable, underestimating blood-alcohol content in most cases, but materially over-

estimating blood-alcohol content in most cases, but materially overestimating blood-alcohol content in approximately 2.3% of all subjects tested.

Confronted with such evidence, the Court today "construes" our drunk-driving statute as proscribing .10% or more of alcohol in the *breath* as well as in the blood. *Ante* at 466-468. That interpretation enables the Court to sustain the use of the breathalyzer as a device for proving violations of the drunk-driving statute even in that small number of cases in which the breathalyzer materially overestimates blood alcohol. At the same time, the Court disregards not only the unmistakably plain statutory language, but also its own opinions that have repeatedly and consistently characterized the statutory violation in terms of a prohibited amount of alcohol in the blood. See *State v. Tischio*, 107 N.J. 504, 506, 510, 516, 517, 522 (1987); *Romano v. Kimmelman*, 96 N.J. 66, 72, 78, 82 (1984); *State v. Johnson*, 42 N.J. 146, 151, 158, 169, 172-73 (1964).

Although the Court's resourcefulness is doubtless well-motivated, the taint on the judicial process is ineradicable. It is also totally unnecessary. Evidence in the record suggests that a relatively minor adjustment in the partition ratio at which breathalyzers are calibrated would eliminate all material overestimates of *blood* alcohol, and a further remand would permit testimony to be elicited on the extent of the required adjustment. Moreover, the Legislature's concern over the ravages of drunk driving is well-documented. Guided by the Attorney General, who has participated as *amicus* in this appeal, it is a virtual certainty that the Legislature would act swiftly to amend the drunk-driving statute to provide specifically that the prohibited

quantity of alcohol in either the breath or blood constitutes a violation.<sup>1</sup> But if an amendment to the statute is required, that is the business of the Legislature. It is not the function of this Court.

Chief Justice WILENTZ and Justices HANDLER, POLLOCK, and O'HERN join in this opinion.

Justice STEIN has filed a separate dissenting opinion.

Justice CLIFFORD did not participate.

*For affirmance and remand* - Chief Justice WILENTZ, HANDLER, POLLOCK and O'HERN - 4.

*For reversal* - Justice STEIN - 1.

<sup>1</sup>See, e.g., *Cooley v. Municipality of Anchorage*, 649 P.2d 251, 252 (Alaska Ct.App.1982) (reflecting amendment to Anchorage DWI ordinance to define violations in terms of blood alcohol or breath alcohol); *People v. Capporelli*, 148 Ill.App.3d 1048, 103 Ill.Dec. 864, 867, 502 N.E.2d 11, 14 (1986) (describing Illinois DWI statute that defines violations in terms of blood-alcohol or breath-alcohol content); *State v. Brayman*, 110 Wash.3d 183, 751 P.2d 294, 296 (1988) (reflecting amendment to Washington DWI statute to define violations in terms of blood-alcohol or breath-alcohol content); *Okl.Stat.Ann.* tit 47, 11-902A1 (West 1989) (defining violation Oklahoma DWI statute in terms of blood alcohol or breath alcohol).

STATE OF NEW JERSEY, PLAINTIFF-APPELLANT,  
v. ANDREW  
DOWNIE, DANIEL MATTHEWS, MARTIN MAROTTA,  
AND  
CHARLES CARROLL, DEFENDANTS-RESPONDENTS

Superior Court of New Jersey  
Appellate Division

Argued October 25, 1988-Decided  
November 28, 1988.

SYNOPSIS

During unrelated drunk driving prosecutions in various municipal districts, before same judge and where defendants were represented by same attorney, the Superior Court, Law Division, Monmouth County, permitted municipal court judge to hear arguments related to admissibility of breathalyzer evidence. State appealed. The Superior Court, Appellate Division, Dreier, J.A.D., held that: (1) county prosecutor had standing to appear in cases; (2) municipal judge lacked authority to consolidate cases arising in different municipal courts; (3) while consolidation may be inappropriate, common proof and argument could be joined for purposes of judicial economy; and (4) in light of prior Supreme Court order, new scientific challenges to breathalyzer test results were inadmissible except as offer of proof.

Reversed and remanded.

1. District and Prosecuting Attorneys 7(1)

Since county prosecutor had plenary authority to prosecute defendants, he could supersede various municipal prosecutors and represent State in criminal proceedings. N.J.S.A. 2A: 158-4, 2A:158-5; R. 3:23-9.

#### 2. Action 57(6)

Municipal judge lacked authority to consolidate cases arising in different municipal courts.

#### 3. Trial 2

While consolidation of cases in different municipalities may be inappropriate, there is no impediment to either litigant on his motion, or for a municipal judge from making application to assignment judge for an order permitting common proof of or argument on similar matters pending before same judge in more than one jurisdiction in the interest of judicial economy.

#### 4. Automobiles 411

In light of prior Supreme Court order requiring that judicial notice be given to breathalyzer test results in drunk driving prosecutions, new scientific challenges to those results and to the tests themselves were inadmissible except as offer of proof for purpose of making a record; overruling *State v. McGinley*, 229 N.J.Super. 191.

Before Judges ANTELL, DREIER AND HAVEY.

*Mark P. Stalford*, Assistant Prosecutor argued the cause for appellant (*John Kaye*, Monmouth County Prosecutor, attorney; *Mark P. Stalford*, of counsel and on the letter brief).

*Stephen M. Pasarella* argued the cause for respondents (*Francis X. Moore*, attorney; *Francis X. Moore*, on the letter brief).

The opinion of the court was delivered by

DREIER, J.A.D.

(1) The State appeals, on leave granted, from a Law Division order permitting the municipal courts of four municipalities, all served by the same municipal court judge, to hear arguments relating to the admissibility of breathalyzer evidence. The defendants in the four cases are represented by the same attorney. The Monmouth County Prosecutor superseded the various municipal prosecutors and represented the State at the Law Division hearing and in this court.<sup>1</sup> In separate actions arising in Burlington County, similar arguments have been raised and disposed of in *State v. McGinley*, 229 N.J.Super. 191 (Law Div. 1988)

(2,3) On the substantive issue, we understand that each defendant finds no fault with the operation of the particular breathalyzer involved in his case, but rather challenges whether the breathalyzer machines in general accurately test the subject's blood-alcohol content. The Law Division judge determined that the four matters should not have been consolidated and that four separate hearings should

<sup>1</sup>Defendants challenge the right of the Monmouth County Prosecutor to appeal the Law Division decision. N.J.S.A. 2A:158-4 and 5 give the Attorney General and county prosecutors plenary jurisdiction to prosecute all criminal matters in this State. It is clear from the wording of N.J.S.A. 2A:158-5 that the words "criminal business" in 8 4 are not limited to crimes, but include the prosecution of "offenders against the laws." Cf. R. 3:23-9. Since the Monmouth County Prosecutor has primary authority to prosecute, he may supersede the various municipal prosecutors; we therefore reject the standing issue raised by defendants.

be held. He refused, however, to preclude the municipal courts from holding such hearings.<sup>2</sup>

(4) The State urges that *Romano v. Kimmelman*, 96 N.J. 66, 72 (1984), conclusively determined by an order of general application, that

(t)he Smith and Wesson Breathalyzer Models 900 and 900A are found to be scientifically reliable and accurate devices for determining the concentration of blood alcohol. Such scientific reliability shall be the subject of judicial notice in the trial of all cases under N.J.S.A. 39:4-50.

And see discussion of this Order, 96 N.J. at 82. The Order further stated:

The results of the administration of Model 900 can be received in evidence in accordance with the standards under *State v. Johnson*, 42 N.J. 146 (1964), without further proof establishing any additional conditions for admissibility (concerning radio frequency interference). (96 N.J. at72)

<sup>2</sup>The State contends that the deconsolidation order is not properly before us, since the defendants have not taken a cross-appeal. This is so, and we find no authority for a municipal judge to consolidate cases arising in different municipal courts. But for future guidance we see no impediment to a litigant on his or her own motion, or as directed by a municipal court judge, making an application to the Assignment Judge in the interest of judicial economy for an order permitting, not consolidation, but a common proof hearing or argument on matters pending before the municipal judge in more than one jurisdiction.

Further,

All... future cases under N.J.S.A. 39:4-50 shall be prosecuted in accordance with the terms of the within Order, which shall remain in effect unless otherwise modified by further order, or final decision of this Court. (*Id.* at 74).

See also *State v. Tischio*, 107 N.J. 504, 506(1987), app. dism. for want of substantial federal question, --- U.S. ---, 108 S.Ct. 168, 98 L.Ed.2d 855 (1988), holding that N.J.S.A. 39:4-50 mandates a conviction for DWI based solely on the breathalyzer reading in excess of .10%. Even in the 1964 case of *State v. Johnson*, cited in *Romano*, the Supreme Court stated that

(w)hile such testimony (disputing the accuracy of the breathalyzer device) is probably technically still admissible, its probative value and weight is almost nil in the present state of knowledge of the scientific and medical community. (*State v. Johnson*, 42 N.J. at 171).

It appears that the "almost nil" chance noted in *Johnson* has ripened into a more plausible attack based upon new data. But the issue here is whether in the face of the Supreme Court's Order and decision in *Romano*, such proof can be accepted other than as offer of proof for the purpose of making a record. R. 1:7-3. In *State v. McGinley*, the trial judge initially determined that, applying the principles of *stare decisis*, he was without jurisdiction to challenge the Supreme Court decisions in *Johnson*, *Romano* and *Tischio*. 229 N.J.Super. at 194-95. He then reconsidered and issued the *McGinley* opinion, stating that the new challenges involved factors never before presented to the Supreme Court. *Id.* at 194-97. In *Romano*

the breathalyzer survived a general challenge based only upon radio frequency interference, and the Court permitted specific proof of the particular device's or location's sensitivity. In *McGinley*, four additional factors were raised, and have been incorporated by defendants here by reference:

The scientific evidence upon which the defendants rely shows the following:

(1) The breathalyzer is designed to test persons having a 2100/1 blood-breath ratio. Such ratios in fact vary from 1100/1 to 3200/1 and the variance can produce erroneous test results. High readings are produced in 14% of the population. (2) The temperature of the machine itself varies, affecting test results. (3) Body temperatures vary, affecting test results. (4) Hematocrit (the solid particles in whole blood) levels vary, particularly between males and females, affecting test results. These sources of error make breathalyzer test results suspect and, to insure reliability, require the substantial reduction of blood-alcohol percentages based on a translation of those results. The leading expert in the field, recognized as such by both State and defense, is of the opinion that the reduction should be .055. (229 N.J.Super. at 193.)

In the case before us it was represented at oral argument that these factors would be shown, plus additional factors such as race. For example persons of Asian origin tend to show falsely high readings based upon average blood-breath ratios under 2100/1. While there may be constitutional ramifications if these allegations are proven, we do not reach this issue. It is better left for review on a more complete record, perhaps after Supreme Court review.

The problem with the approach taken in *McGinley* and argued here is that the Supreme Court's order in *Romano* was not that judicial notice "may" be taken, but that judicial notice "shall" be taken of the scientific reliability of the breathalyzers. The machines were "found to be scientifically reliable and accurate devices for determining the concentration of blood alcohol." 96 N.J. at 72. The only qualification to this finding was the necessary proof of freedom from radio frequency interference. "All...future cases under N.J.S.A. 39:50-4" are subject to the order.<sup>3</sup> Once judicial notice is taken, no proof to the contrary is permitted. *Evidence R. 11*; *Klimko v. Rose*, 84 N.J. 496, 50-4 (1980). As noted in *Romano*, the only issues subject to proof in the admission of breathalyzer results are the working nature of the particular machine, the qualification of the operator, and the method of administration of the test. 96 N.J. at 91. Therefore the order remanding the matters to the separate municipal courts for proof outside of these permitted areas was substantively incorrect.

The issues raised by defendants are of significant dimensions since they have alleged variables, heretofore unconsidered by New Jersey appellate authority, in the interpretation of breathalyzer results. As noted in *McGinley*, other states have considered the issue, with varying results. Compare *State of Nebraska v. Burling*, 224 Neb. 725, 400 N.W. 2d 872 (1987), with *People v. Pritchard*, 162 Cal.App.3d Supp. 13, 209 Cal. Rptr.314 (Super. Ct. 1984),

<sup>3</sup>Since *Romano*, the statute was amended to read as it was enforced in *Tischio*. But the Supreme Court in *Romano* was aware of the new *per se* language, 96 N.J. at 78-79, 94, and still made its order effective in all future cases.

*and People v. Gineris*, 162 Cal.App 3d Supp. 18, 209 Cal.Rptr. 317 (Super.Ct.1984). The issues are especially important in New Jersey in view of the *per se* application of N.J.S.A. 39:4-50. The matter of the temperature of the machine may easily be solved, and can constitute merely another item on the operator's checklist. But, if defendants are correct concerning the variability of the 2100/1 breath-blood ratio (the internal basis upon which the breathalyzer machine is based), vastly different individual blood-alcohol content can result in the statutory .1% reading. Viewed a different way, inebriated drivers may pass, while comparatively sober drivers may fail a breathalyzer test. Focusing on the variation in the 2100/1 breath-blood ratio, and accepting that the test must be one which indicates blood-alcohol content, significant sections of the population may be held to a standard different from others. As to an individual's difference from the norm, if the only way one can determine how he or she fits within the alleged breath-blood ratio continuum of from 1100/1 to 3200/1, with the additional variables of the person's hematocrit levels, is to have a blood test (which itself could conclusively establish the blood-alcohol level), then the machine may well be no more than a rough gauge of inebriation in all but the most serious cases. See *State of Nebraska v. Bruling*, *supra*, applying a 52.38% reduction factor, as opposed to the .055 reduction suggested in *McGinley*.

We recognize these problems, but we are also bound by *Romano* Order, which we view as a clear exercise of the Supreme Court's constitutional rule-making power. N.J. Const. (1947), Art. VI, § II, par.3. The Order is definite when it states that it is binding in all future cases. 96 N.J. at 74. While we recognize the scholarly and persuasive analysis of the court in *McGinley*, we must overrule that

decision unless and until the Supreme Court takes some action to relax the *Romano* Order. We can only suggest that this matter be reviewed immediately, perhaps by a Supreme Court remand of these cases to a judge or master to establish a record. We may not, however, take this action ourselves, and are constrained under the present law to reverse and remand the four matters before us for separate trials at which such proof shall be inadmissible except to make a record for some future appeal. We will nevertheless, on our own motion grant a stay to permit defendants to petition the Supreme Court for certification.

**REVERSED AND REMANDED.**



MONMOUTH COUNTY SUPERIOR COURT  
LAW DIVISION -  
DOCKET NO.: 13525

STATE OF NEW JERSEY,  
Plaintiff,  
-vs-

ANDREW DOWIE, DANIEL  
MATTHEWS, MARTIN  
MAROTTA  
and CHARLES CARROLL,  
Defendants.

TRANSCRIPT OF  
ELECTRONICALLY  
RECORDED  
PROCEEDINGS

June 15, 1988

TRANSCRIPTION REQUESTED BY: COUNTY  
PROSECUTOR'S OFFICE BEFORE: HON. ALVIN Y. MIL-  
BERG, A.J.S.C.

APPEARANCES:

MARK B. STALFORD, ESQ.  
For the Plaintiff.

JAMES BUTLER, JRS.,  
For the City of Asbury Park

FRANCIS X. MOORE, ESQ.,  
For the defendants.

THE COURT: Please be seated. Good morning Gentlemen.

MR. STALFORD: Good morning.

THE COURT: State of New Jersey versus Downie, Matthews, Marotta and Carroll, miscellaneous number 6-426-88. May I have the appearances on the record please. First the Prosecutor?

MR. STALFORD: Mark B. Stalford, Assistant Monmouth County Prosecutor.

MR. BUTLER: James Nelson Butler, Jr. appearing on behalf of the City of Asbury Park.

MR. MOORE: Francis X. Moore, 211 Maple Avenue, Red Bank, New Jersey on behalf of defendants, if it please the Court.

THE COURT: All right, gentlemen, I guess it is about some two weeks ago, Mr. Stalford came to my chambers to advise me that he wanted to appeal a consolidation in the municipal court and asked what steps he should take.

I directed that he file a motion without a date and that I would fix a date and that once it is filed, I would notify counsel. I guess about two or three days thereafter the motion was filed and I notified counsel that I would hear the case today.

I will call upon you first Mr. Stalford. First, you can address your motion for leave to appeal, *nunc pro tunc*.

MR. STALFORD: Your Honor, first I should put on the record that the factual statements made in my brief, -- and I think I made this clear, -- and if I didn't, I attempted to in my brief, -- are made based upon those facts or those pieces of information that I could put together on the short notice that I had to work on this matter.

If there are any inaccuracies, they were not intentional, they were not made in any way to try and thwart justice or to misrepresent things to the Court. But I was in a position of having limited amounts of time. Mr. Butler who was in a trial on a murder case, and he seems to be the man most familiar with this from the State's point of view.

I was not party to the initial matters and the initial proceedings on this, -- and I say that only in the fact that I didn't have the chance to be there, to know what was going on, and to have first-hand knowledge.

So as far as factual inaccuracies, -- they are not made intentionally, they are not made to thwart justice as we seem to glean from Mr. Moore's brief. But they are made because that was the best information I could get at the time.

With regard to my motion for leave to appeal, -- first I think it comes in two parts. One, am I the right party to be here? That is, am I as the County Prosecutor's representative, the right person to be standing before Your Honor?

In that regard, I would bring up two points. One, as the rule states, on all appeals to the Law Division, on

municipal court matters, -- involving disorderly persons and motor vehicle offenses, -- the Court Prosecutor is the representative of the State.

If we were to follow the procedure Mr. Moore seems to be advocating in his brief, -- it would be up to one of the municipal prosecutor or a municipal prosecutor to actually bring the motion for leave to appeal. That having been granted, to step aside and have the County Prosecutor then walk in and actually argue the merits of the appeal.

I submit that that is a bifurcated process which is not the intent of the statute. The statute says that the County Prosecutor is to represent the State on appeal. It means all aspects of the appeal, which would include the motion for leave to appeal, because it is being brought to the same court.

If we were to have that process that Mr. Moore seems to be advocating today in this Court, Mr. Butler would be standing here now arguing for leave to appeal, then Mr. Butler and I would switch places. And I would come forward and Mr. Butler would retire. It seems to be an awkward and not what was intended by the Statute.

The second point is, is the County Prosecutor entitled to bring leave to appeal under these circumstances? I submit that the County Prosecutor has a supervisory role in all matters having to do with criminal and quasi-criminal matters in the County of Monmouth, by constitutional mandate. He is, -- that is, the County Prosecutor, the chief law enforcement office of the County, -- that he has the authority to supersede a municipal prosecutor in all matters

relating to those statutes which -- statutes and enactments which deal with State Legislature.

I would not say that if we were here on a municipal ordinance violation. That being so, I would submit that the County Prosecutor is in fact, the proper authority to bring a motion for leave to appeal, -- to bring this matter, to bring any matter, and to present any matter involving State statutes to the courts, -- whether it be the Superior Court, Law Division or the municipal courts, if the County Prosecutor so desires.

The motion for leave to appeal is brought on a *nunc pro tunc* basis, because in fact, if we count the days from the date that orders were entered by Judge Pappa, -- I am in fact ten days, -- that is, the State is ten days out of time. I would submit that there is good cause to leave to grant the motion *nunc pro tunc* because the County Prosecutor's Office acted as expeditiously as possible under the circumstances, in that we knew nothing about this matter until June 1st., when I received a cover letter from Judge Pappa, which was directed I believe to Mr. Moore and possibly to all the parties, enclosing signed orders.

That is the first notice, -- the first time anyone had brought anything to the attention of the Prosecutor's Office.

**THE COURT:** Why did he send that to you Mr. Stalford?

**MR. STALFORD:** I have no idea and I have not discussed that with Judge Pappa. I did note that I was cc'd on the letters and the enclosed orders.

THE COURT: I was curious to know how you learned about this. You just explained it to me. Okay, go ahead.

MR. STALFORD: That is it. That was the first time, -- I didn't know anything that happened in municipal court. I was not noticed on the motions that Mr. Moore brought, -- and I say that only for the fact that I didn't have notice.

THE COURT: All right.

MR. STALFORD: Not from any other standpoint. I didn't know it was argued. I didn't know it was pending. No one had brought it to your attention. Anyone in my office to my knowledge, -- and I am the person in the Prosecutor's Office who would be made aware of these things.

So, at that time, that was my first time, first information, first knowledge of what was going on. And in fact, the motion was filed within ten days of that date.

THE COURT: Let's move on to the next issue, -- consolidation.

MR. STALFORD: We have a situation Your Honor where a municipal court judge has taken four cases, in four separate towns, and consolidated them into one proceeding. Not because of conflict, not because the judge of Town A can't here the case, and therefore, it has been sent to Town B to be heard, on some reciprocal agreement to the towns, but on the basis of a common issue.

I submit that there is no authority in municipal court anyone can point to, that allows a municipal court judge to do that. I think what we have to do is, --

THE COURT: If he couldn't do it, could I do it? In other words, can it be done by anyone?

MR. STALFORD: I don't see any authority anywhere in the rules that says that anybody can do it. But I think if anyone can do it, it would have to be brought to a supervisory judge; that is, a Superior Court, Law Division Judge or higher.

And I say that because your jurisdiction; that is, the Superior Court, Law Division extends not only throughout the County, but in fact, throughout the State. Judge Pappa's jurisdiction sitting in Asbury Park is limited to the boundaries of Asbury Park. His jurisdiction in Deal is limited to the boundaries in Deal, and so it is in South Belmar, and in Allenhurst. He has no authority over those other cases.

So, sitting as the Asbury Court judge, he has no authority to consolidate any other case into that Asbury Park case, or with that case.

Your Honor, as a Superior Court judge has authority over matters involving Asbury Park, Allenhurst, South Belmar and Deal. And if there is any justification or authority in the statutes, or in our case law to do a consolidation under any circumstances, it would lie within Your Honor.

And I would submit that there is some precedent for consolidating matters. It was done a few years ago in another case involving Mr. Moore, -- and I believe its caption, State versus Lopat, which eventually gave rise to Romano vs. Kimmelman case which also was attacking the breathalyzer.

But the authority I would submit has to lie within the Law Division.

THE COURT: When were those cases consolidated?

MR. STALFORD: I believe, -- in one of Judge Horan's courts, and I am not sure whether it was Atlantic Highlands or one of the other, -- Mr. Moore would probably be able to help us. But there were a series of defendants in the Lopat case.

THE COURT: Was there any objection to that consolidation?

MR. STALFORD: I would have to rely on Mr. Moore. I was not a member of the Prosecutor's Office at the time, and I don't know. I know that there was intervention eventually by the Prosecutor, and I believe at some point, the Attorney General's Office. And eventually the Attorney General took over the whole case, as far as the State was concerned.

So, there is no authority. There is no way that you can extend a municipal court judge's authority to do what was done there. If Mr. Moore wants to bring this issue up, he can raise it in any one of these cases. If he wants to raise it in all the cases, he has to bring some action into the Law Division to somehow bring all the cases together to hear the issue.

The only issue left, -- the only part of this appeal that is left, is the actual issue which Mr. Moore wants to raise. And as I understand it and again, this has been based on representation or information gathered by me, and

it is not in any way by discussions or representations made by Mr. Moore to me or by anybody in his office.

The issue underlying all of this is an attack on the integrity, the principles upon which the breathalyzer machine operates. I would submit that if we look at the plain clear language and order in Romano vs. Kimmelman, we find that such an attack is not permitted without some action by the Supreme Court of New Jersey.

The Supreme Court has acted in Romano versus Kimmelman. It has mandated, ordered, that judicial notice of the accuracy of the machine shall be judicially noticed by lower courts. There wasn't any discretion, any leeway left within the lower courts. Judicial notice shall, -- mandatory language.

The other parts of the order in Romano versus Kimmelman which deal with the proper operation of the machine, -- I would submit that what they are talking about there, is was the machine properly tested for its internal workings like a radar machine is tested to be properly operating on the day in question.

In other words, was there a pre and post test spot check of the operation of the machine. Was it operating properly? Was the ampule, --

THE COURT: Is this something you should be arguing before the municipal court judge and not before me now?

MR. STALFORD: Well, the municipal court judge has already ruled that won't be hearings. So, the appeal is now on whether there should be hearings. This should

have been an issue raised below, but on appeal, -- this is what I am appealing, -- this is the under -- this is the second part of the appeal. The first part is, should there have been a consolidation, and I submit there shouldn't have been. The second part is, should there be hearings at all?

The municipal court has ruled that there shall be hearings and that is what I gleaned from the orders.

THE COURT: We will find out from those that were down there exactly what is going on. As you say, you got this all second-hand.

MR. STALFORD: Absolutely. I have no first hand knowledge of what happened.

THE COURT: Okay, anything else?

MR. STALFORD: Just if I can finish what I was saying,--

THE COURT: Sorry.

MR. STALFORD: The Supreme Court was talking in, the machine must be operating properly, were the spot checks, -- where the coordinator is checking the machine and making sure that it was giving a .10 reading when a simulator one .10 solution is put in, -- that there was no fault in the mechanics of the machine, -- not the underlying principles, not the basis of the machine. That has been judicially noticed. But, is it functioning? Is the procedure of the machine operating properly? Are the mechanics of it working properly? Is the mechanics of

the ampule properly constituted, and is the operator duly certified to operate the machine?

Those are the parts that the State must prove on each individual occasion, -- not the underlying principles of the machine, -- the scientific principles upon which the machine operates or gives its reading.

And I submit that is, if I understand it, the attack which Mr. Moore wants to bring. And I submit that the municipal court is the wrong place to be bringing that attack. Thank you.

THE COURT: The Order of Consolidation that you refer to states, "and it appearing to the Court that all of them", meaning all of these four cases, "involve claims and defenses based on each case upon the, one, accuracy and reliability of breath testing machines, -- methodology, science and fact. Incompetency and admissibility of breath testing procedures and systems"

And that is what you are objecting to, is that correct?

MR. STALFORD: Yes, sir.

THE COURT: Okay, Mr. Butler, what is your position? You are the Prosecutor in Asbury Park, is that correct?

MR. BUTLER: That is correct Your Honor.

THE COURT: Have you, at any time, discussed this case with the other prosecutors in Deal and South Belmar and Allenhurst?

MR. BUTLER: Yes, I have Your Honor. Initially when Mr. Moore originally had brought this application before Judge Pappa, he had a case in each of the four municipalities where Judge Pappa sits. Each of the Prosecutors were noticed that this particular motion was going to be made, -- the position for consolidation and the arguments which Mr. Moore espoused with reference to this matter.

And on the particular date that the motion was argued, Richard Mills appeared in Court and he consented to the application as well as the consolidation as well as I did. Mr. Shore and Mr. Gallagher were also noticed and they had presented no objection with reference to this particular matter being consolidated.

Prior to appearing in Court, I would just like Your Honor to know the reason why, when I was approached by Mr. Pascarella and Mr. Moore to move this matter in the Asbury Park Municipal Court, -- they informed me of the potential argument they were going to make with reference to the 2100 to one, -- the blood to breath ratio.

Well, prior to agreeing to have this application made in Asbury Park, I had an opportunity to speak to Dr. Tindle. Dr. Tindle is an expert with the State Police, who we use in many drunk driving trials. When I spoke to Dr. Tindle he informed me that the breathalyzer is based upon the blood to breath ratio of 2100 to one, which is the average blood to breath ratio in a person's body.

Mr. Moore's position and the position espoused by Mr. Moore, and he will correct me if I am wrong, is that everyone is not at a 2100 to one. Dr. Tindle informed

me that there is a possibility of a .04 variation in the reading if the individual who is tested is less than a 2100 to one.

Of course, it would be the defense's burden to prove that his client was less than a 2100 to one, and then he would have to prove what if any variation that would have on the breathalyzer machine.

I personally thought that was a viable issue and if we have people coming into court, -- and municipal court is a place, -- and I hate to say this, because it is kind of corny, -- but a place where we are trying to seek truth and justice. And if Dr. Tindle's information that he provided to me was correct, and I have no reason to doubt it, since we have use him on many drunk driving cases. Then it is of concern to me, if we are convicting people, -- for instance their symptoms are in fact, proper and they don't appear to be drunk and if their blood to breath ratio is say 1200 to one, and the variation is a .04 and their reading is a .10 or .11 and that would kick it down to a .07 and not at the presumption there between the .05 and .10 where we can still get a conviction for drunk driving. But if their symptoms are in fact accurate, they lose the presumption, then maybe the person should be found not guilty of drunk driving.

That was the premise that I agreed to hear this particular situation. I consented to a consolidation because -- as opposed to having Mr. Moore submit the experts in four different towns, -- we said we would just consolidate it all in Asbury Park and I would in fact act as the Prosecutor. And if other parties wanted to sit, they would sit. If not,

– and Mr. Mills did appear. Mr. Shore and Mr. Gallagher just wanted me to let them know what was going on.

It was agreed that I would in fact notice the Attorney General's Office once I received the copies of the order. And as a matter of fact, I spoke to Mr. Stalford as to the person that I should in fact, contact in the Attorney General's Office.

The reason why I wanted to contact the Attorney General's Office was because I remembered years ago, when I was in the Monmouth County Prosecutor's Office, I recalled in this particular courtroom, they had, -- they were taking the machines apart and everything, and Mr. Moore was here, and they had the State Police, – and I can't remember the gentleman's name from the State Police who was handling the case, but they argued that particular motion up here. So, I was noticing the Attorney General's Office because they usually get involved when you are talking about the reliability of the breathalyzer machine. So that was my inclination --

THE COURT: Why weren't they noticed about this motion to consolidate?

MR. BUTLER: Because we were all consenting to that. And we didn't feel it was necessary for them to notice at that point in time because all of the municipal prosecutors were in fact, consenting to the motion to consolidate.

THE COURT: Their concern was the reliability of the machine as you just stated. I would have thought that they would have notified before the fact, not after the fact.

MR. BUTLER: Well, I was notifying them after the fact, -- that was my decision to make. The rest of the municipal prosecutors did not tell me whether they wanted the Attorney General noticed or not. But I felt it appropriate to notice the Attorney General prior to having any pretrial memorandums. That is why I was noticing the Attorney General. How Mr. Stalford got his notice, -- I guess the Judge just sent a notice.

THE COURT: The judge apparently sent it to him. What is your position on standing of the County Prosecutor?

MR. BUTLER: I think Your Honor the proper forum, -- it should be held in municipal court. I think as far as this whole argument, --

THE COURT: No, the standing, -- does the Prosecutor have standing to come to bring this motion?

MR. BUTLER: To be truthful with you, I don't know, -- I don't think he does. I would think it is a proper application that should be made to the municipal court, where it was made. All the municipal prosecutors were noticed, two municipal prosecutors were there.

THE COURT: In other words, what you are telling me is, that you really oppose this motion?

MR. BUTLER: In essence, I do. Because I think the proper forum is in municipal court.

THE COURT: Does the Prosecutor have standing to go into the municipal court and try this case if he wants to, or any case?

MR. BUTLER: In essence, I think he does.

THE COURT: Okay.

MR. BUTLER: In essence, I think he does. If he wants to do that, --

THE COURT: He has standing to go down there and try this case, but you are telling me you don't think he has standing to take this appeal?

MR. BUTLER: I am going to backtrack for a moment Your Honor. I am going to backtrack for a moment. In thinking that through, the Prosecutor's Office does have right to go to the municipalities, so I guess he would have standing to make this application. But I think the proper place to make the application should be in municipal court.

THE COURT: I think the Prosecutor has the right to go into municipal court, just like the Attorney General has the right to go into the County Prosecutor's Office and run the show.

MR. BUTLER: He has a right to do that. He can't come down to our forum, but I think this forum is not the proper forum to do that.

THE COURT: Mr. Moore.

MR. MOORE: Your Honor, obviously, and I am sure you know, I talk very fast, -- so if I am talking too fast, raise your hand and I will try and stop or slow down. First, if it please the Court, --

THE COURT: No, I just would tell you to make sure that I hear everything you say, don't talk too fast. Don't have me raising my hand all the time. Take your time so I can comprehend everything you are saying.

MR. MOORE: If I see any reflection -- I understand that.

THE COURT: Because I maybe so intent listening to you, I may not be able to coordinate raising my hand.

MR. MOORE: I can totally understand that, so I will watch your eyes to make sure if there is any inflection, if it please the Court, with relationship to some significant intelligent statement that I will attempt to repeat.

I respectfully submit to the Court, with relationship to the issue as to whether or not the Prosecutor has standing, -- obviously, if it please the Court, we are not talking about an appeal, -- we are talking about a leave to appeal at this state of the proceeding.

If we were talking about an appeal, there is no question in my mind that the Prosecutor on an appeal to the County Court may very well have standing. The question is whether or not he has the standing with relationship to the leave to appeal under our rules.

Obviously under the circumstances, what we are talking about is the physical appearance on notice of municipal prosecutors who are in fact the representatives of the State on notice, and I might add, if it please the Court, although the defendant submitted briefs with relationship to the authority under which we felt that the Court had

the power to be able to grant the consolidation, when we did appear, physically from Mr. Gallagher, Mr. Shore, -- not only was I not privy to any conversations they might have had with Mr. Butler, but there were no responses from them from the point of view of opposing briefs to the consolidation, -- no documentation whatsoever. Similarly the case with Mr. Mills.

Obviously under the circumstances, the one person we must look at is the defendant. And the defendant is entitled to believe that people who appear on behalf of the State have the authority to appear, which they do. Secondly, that there is something wrong with what may have happened before Judge Pappa. Obviously they have certain limited period of times within which they can take certain action. Nobody did. Nobody did.

I would respectfully submit to the Court that the question has been raised as to whether or not the issues with relationship to the prior consolidation in State v. Lopat, whether or not that was the characterization that may have existed in Lopat. Let me respectfully submit to the Court that I am reading from the flysheet of the Appellate Division and my recollection is 196 New Jersey Super, 544. If I am incorrect, then obviously under the circumstances I stand corrected.

It is at page 11 on the flysheet, which obviously therefore would be ten pages from the beginning on the recorded opinion. It says, -- defendants argue that that municipal court judge lacked authority to consider the suppression of breathalyzer evidence. The argument comes late, -- to everyone here of course, -- the State in Lopat by failing

to seek leave to appeal contrary ruling, accepted the municipal court jurisdiction to hear the evidentiary matter.

In any event defendants rely on 3:5-7, which requires application for suppression to be made to the Superior Court only in matters involving unlawful search and seizure -- they cite, et cetera. The suppression application in Lopat however was not based upon the competence of the evidence sought to be suppressed but rather on the alleged unlawful nature of the arrest itself.

In Lopat the municipal court was concerned with the competence of the evidence based upon the reliability of the breathalyzer and the conditions existing at the time of its use. It is entirely appropriate for a municipal court to consider such a challenge in the manner in which the scientific evidence was obtained, and the precautions taken to avoid distortion.

They cite of course, State versus Wojesek (phonetic), which I am sure Your Honor will recall. Part of that case of course, emanated in this County. In any event, obviously if it please the Court, there was consideration by the Court in Romano at the Appellate Division level with relationship to that circumstance.

That issue was not appealed by the Attorney General either. So that when the matter did show up in the Supreme Court, obviously that issue was the law. In any event let me respectfully submit does he have standing? The people who have standing, if it please the Court are the municipal prosecutors.

Your Honor asked the question whether or not the Prosecutor can go down to the municipal court and prosecute the matter? The answer to the question is the affirmative, yes. Obviously there are procedure with relationship to that too, if it please the Court.

I respectfully submit there is procedures with relationship to the Attorney General intervening within the County Prosecutor's category, and that if it please the Court is my understanding from my experience in the Attorney General's Office would have required the assignment judge as a matter of fact to take certain steps in order to do so.

All of those procedures if it please the court, which may have been formulated were not formulated in this case. There is of course, very clearly with relationship to recitation of the State's brief an allegation that notice was required of the County Prosecutor by my filing for a motion of consolidation in municipal court. No so.

I would respectfully submit that there is absolutely no requirement with relationship to notice to those parties. As a matter of fact, I would respectfully submit as a practical matter, I am sure Your Honor recalls that the Superior Court must be fed up with the Office of Francis X. Moore filing motions before the Superior Court on a regular basis.

THE COURT: I wouldn't say that.

MR. MOORE: And in addition to that, if it please the Court, -- I am sorry, -- and in addition to that, I would respectfully submit there is no requirement other than the 3:5-7 or the constitutional application.

The second issue if it please the Court if he has no standing obviously, -- is whether or not he is of our time. Obviously, ther is no requirement for written orders in municipal court. That is Rule 7:4. That as a matter of fact, the oral order is the time when it begins to run against you. If in fact that was March 30th., and I must add, March 30th. was a second appearance date if it please the Court, because the Court wanted to me certain. -- Judge Pappa did, that there in fact, had been notice to the prosecutors of the municipalities involved.

The second question is whether or not the prosecutor's argument concerning the jurisdiction, -- I cite, if it please the Court, 39:5-3, which is very clear, -- all proceeds are in the proper jurisdiction when they are before the judge who has the jurisdiction to hear it.

Now, for the sake of the moment from the point of view of the consolidation, let me respectfully submit to the Court, the facts and circumstances under which it would come about to be in Asbury Park. Number one, the issue was presented to the Court in each of those courts by motions with relationship to attach.

Judge Pappa called, -- as a matter of fact, even Mr. Butler was in on the conversation when we were in chambers, when Judge Pappa said, Mr. Moore, I really am in a position where I want to hear what it is all about. Is Dr. Debowski's .055 the proper tolerance? Is in fact, there a methodology by which the 2100 to one breath blood partition co-efficient ratio in fact is not the average?

Is there in fact a methodology by which the scientific community is in a position to tell us whether or not the

body temperature can be critical? Yes. Mr. Moore, I want the experts. How do you get them in here? Judge, very simple. All I have to do is be in a position to recognize that I have a client who is capable of affording to pay \$28,000.

If I have that client I would respectfully submit that the seeker of the truth will hear the truth as to what it is. But Judge, the difficulty again is, we are not dealing with relationship to whether or not there is any one individual capable of spending \$28,000 to come to the Asbury Park Municipal Court, South Belmar, Deal or Allenhurst.

But I would respectfully submit that I will do everything possible if it please the Court to bring in the necessary experts. In addition, I will submit to the Court the experts who exist throughout the country with relationship to the blood/breath partition coefficient ratio. Mr. Moore, obviously you must make that application. Judge, I will make it in Asbury Park. Mr. Butler was there. With Your Honor's permission, I will make it in Asbury Park. Fine. I make it in Asbury Park.

The first day I appear in Asbury Park, I would respectfully submit the Court wants to be certain the municipal prosecutors quite justifiably were noticed. Additional notices are transmitted, and on March 30, the Court hears the argument.

I can remember if it please the Court that I stood up and I was up for approximately a half hour to thirty-five minutes with relationship to that argument. The issue of the argument was relatively simple. Judge Pappa's position

was number one, if your four clients together and they are capable of being able to afford to pay for Dr. Simmons to come from the University of Southern California, to pay for Dr. Hastalda to come from the University of Washington, -- to pay for Dr. Debowski to come from the University of Oklahoma, to pay for Dr. Borgenstein to come from the University of Nebraska, -- obviously under the circumstances because of their expertise and they field in which they are involved, -- quote, unquote, (indiscernible) that obviously to reach out and bring them in, would require that it be put for a particular day.

Judge Pappa being extremely gracious I might add, Mr. Moore, I think probably the better performance, -- and I think Mr. Butler was there then, -- would be to hold these matters on Saturday. He asked Mr. Butler would he have any objection to it.

MR. BUTLER: I asked for it.

MR. MOORE: All right, Mr. Butler asked for it. Obviously, if it please the Court, at that moment, -- that as a convenience to the Court, it causes a judicial determination to be made by the same judge incidentally, who has the jurisdiction of each of the four matters, -- and obviously if it please the Court, the only inquire then left was to determine whether or not the clients were capable of being able to afford to pay that type of expert fee.

That is, the seeking of the truth, I would respectfully submit that is supposed to be the empowering of municipal court jurisdiction.

The question as to whether or not he is out of time if there were to be any objection, -- the State was adequately represented. There were four people there, if it please the Court, -- all of whom were totally competent to practice law on behalf of the municipalities which they represented.

When I say there were four people, -- there were two people there, there were four people noticed. In addition to that, -- I really am somewhat confused. If the Prosecutor wants to intervene, I welcome the opportunity for one individual from the Prosecutor's Office to try the case against me, but in the proper forum.

I would respectfully submit that if Mr. Stalford wants to come to Asbury Park as a result of the judge's direction, I invite him to be there. Obviously, if it please the Court, that is not the concern. Had that been the concern, that is relatively simple.

THE COURT: It may be after today Mr. Moore.

MR. MOORE: I would hope that he would be. But I would hope, if it please the Court, that it is in the proper forum in Asbury Park, and I hope that he realizes that Mr. Butler in being gracious about making certain that Saturdays would be the day that we could call the experts, because of the conveniences, -- from other states, -- that I would respectfully submit that I would anticipate hopefully that Mr. Stalford would be in the same position as Mr. Butler, -- and be certain that he would make himself available on Saturday morning.

Obviously, if it please the Court, if you don't place it in that forum, the question arises is this a prejudice to the defendants? The prejudice is obvious. Mr. Downie is a young man who is working day to day to keep himself alive. When you were a defense counsel, as I am sure Your Honor can recall, -- you were in a position where you were saying to the client you have to pay certain experts. The immediate reaction is, my God are they so expensive. The second reaction is, give me some time.

Obviously Mr. Butler and Judge Pappa were being gracious about it, because there is currently , -- whether Your Honor knows and I am sure Your Honor keeps track on a regular basis, a particular mental gyration in which the scientific community has diversified itself into camps deciding whether or not the *per se* in fact and be proven with a 2100 to one, -- where the tolerances in some people's mind are zero two, zero one, zero four, zero five, and obviously if it please the Court, I will respectfully submit that the point of the motion in the municipal court in Asbury Park was, by convenience, to make certain that those experts could be produced, and that obviously the result would come about as to the disposition that would be proper and the truth would be known.

The next, if it please the Court is whether or not the municipal court has the power to consolidate. Let me respectfully submit that it is clear to me under Rule 7:4-2f, it is please the Court, that you can try complaints together. And under 7:4-2f, in all other matters, with the consent of the persons charged, -- that's me, -- the Court, -- that is Judge Pappa, for convenience may consolidate complaints for trial.

What could be more convenient under 7:4-2d I would respectfully submit, -- strike that. 7:42f, -- for the municipal judge who sits in the same four towns to hear the same evidences with relationship to whether or not there is an issue of admissibility of evidence.

Don't, -- I would respectfully submit, -- misunderstand me. The issue, I would respectfully submit, is not quickly paraphrased as dealing with the breathalyzer reliability. That is not it. Under 39:4-50.3, the Attorney General has a responsibility to determine that the methodology and the procedure is satisfactory. That is the statutory direction to the Attorney General.

The question that is being resolved in Asbury Park is that since April 7th, of 1983, when in fact, we converted ourselves from an issue of corroborative proof or inference from which the trier of fact would determine guilt or innocence, -- by a combination of other evidences including the resultant machine. Are we now at a point where since April 7th, 1983 there is a different standard in the scientific community by which the Attorney General is commissioned, to determine if the methodology and procedure which is being enforced is different from what it was when it was used as corroborative proof.

Very simple, -- if it produces a uniform and reliable result, it can be corroborative. Question. Does the standard by which the statutory enactment changed change the attitude from the point of view of the Court's position as to whether or not judicial notice is acceptable as to that result?

The answer to the question is very clear. Justice Handler, at page 90 of Romano vs. Kimmelman is a matter of fact, almost, almost cautioned the attorney general by first mentioning at page 89, the burden with relationship to proof and then at page 90, the circumstances if it please the Court under which it was to be concerned, -- under which the State should have been concerned -- my heavens. I know I can find it very quickly.

And that, if it please the Court, is the language which is reflected at the bottom of 89 and the top of 90, -- and here, in drunk driving prosecutions, a substantial burden of proof to establish the competency or admissibility of the results of the breathalyzer test is appropriate because of the serious consequences of the breathalyzer reading in such prosecutions. See State vs. Johnson, which incidentally Justice Handler says, "Accordingly, in this case, we hold that the burden of proof prescribed under State vs. Johnson, Supra 42 New Jersey be followed as to all conditions necessary for the admissibility of breath, --"

Does that sound conclusive? Of course it does not. What he is saying is, State versus Johnson, 42 New Jersey is still the law, and therefore, if it is, there are three criterion set up before the admissibility of the result can come about.

One, that the machine is properly approved by the statute. I have just argued that if it please the Court with relationship to methodology. Two, that in fact the operation technique and methodology and procedure is scientifically reliable. Romano did not deal with the methodology and procedure, if it please the Court. It dealt very simply with

the external sources which may be infused into the machine from outside the machine.

I would respectfully submit that 2100 to one does not deal with the machine. The machine of course is critical to the extent that there is a, -- there is a valve, as I am sure Your Honor knows, that collects 56.5 milliliters of air which is exactly 140 to 2100 to one, on the belief that the scientific community says that the average person would have 2100 to one.

But that there is a total divergence, -- there is no unanimity as to where we each stand, -- if that be true where you are using what is called Biers Lambert Law as to logarithmic equations which bring it back to the alleged breath alcohol reading, -- what is the reading, if it is an average person?

I would respectfully submit that if that reading result would be only for average people, that the only people who could in fact be tested on that machine is Chinese people because there is more of them than there are of anybody else, and they must be the average. It must be a woman because there is more women than men, and they probably are dead, because there is more dead people than live.

If that is true, does the scientific community consider whether or not there are standard deviations, and in fact, average deviations.

THE COURT: All right, Mr. Moore you have five more minutes, and I think I --

MR. MOORE: Thank you. Your Honor, in order to make certain that I don't miss anything, is there anything that Your Honor particularly wants me to attach significance to?

THE COURT: It is all significant Mr. Moore. What you think you want to call to my attention, you know, -- you are welcome to do so. You can test the standing of the prosecutor. You also can take the position that this motion if you did have standing, is out of time. The position is that under Rule 7:2-f.

MR. MOORE: 7:4-2f.

THE COURT: 7:4-2f, -- the Court has the right to consolidate cases of similar facts, -- and ;you have just argued the position as to the admissibility of evidence in municipal court. I think you have covered everything.

MR. MOORE: Ok, that reminds me -- that reminds me of one Your Honor. The question you raised with relationship to whether or not the pretrial hearing is the proper tribunal, --

THE COURT: Pretrial hearing is the proper tribunal? I don't --

MR. MOORE: Before the municipal court. Is the minicipal court the proper tribunal to hold this type of a pretrial hearing? And I read to you of course, --

THE COURT: The municipal court can pretry a criminal case.

MR. MOORE: The other question that he raises, --

THE COURT: If it is necessary, -- there is no question about that, and I think the prosecutor takes the position that the municipal court judge can conduct a pretrial. What he takes issue with is what he is going to pretry. Right Mr. Stalford?

MR. STALFORD: Yes, Your Honor.

MR. MOORE: You mean, whether or not he is going to pretry it? I have no objection to --

THE COURT: No, whether the municipal court judge can pretry a case. What Mr. Stalford takes issue with is the issues that the judge is going to pretry.

MR. MOORE: Incidentally, I would respectfully submit, from the point of view of the pretrial is allegations in the confines of his brief, saying that he has foreclosed. Incidentally, 313-1, a and b, - and Rule 8:1, I would respectfully submit are very clear. If the comments directly under the rules clearly say, that the State is not foreclosed. There is no foreclosure.

As a matter of fact, the pretrial conference if it were to be held tomorrow in fact, I would respectfully submit would clearly delineate the issues which would be presented to the Court. And whether or not the standards as to the approval which incidently is the proper evidences which should be presented to the Court.

These are more proper I would respectfully submit than under State vs. Lopat, which Romano vs. Kimmelman

clearly in the Appellate Division level said was the proper tribunal before which it was to be heard.

The other answer, - in State vs. Lopat, I would respectfully submit, -- Your Honor asked the question of the prosecutor. I will give you the answer as I recall it. One, was there in fact objection: Yes. The objection was raised by the Attorney General. Question. When did the Attorney General get involved? The Attorney General by formal application intervened in State vs. Lopat, as a result of a subpoena to individuals or the State service, -- they made the application on hearing. It was heard. They were invited in.

The issue was as to the 3:5-7, -- the same as it is in the Appellate Division, which was raised by the Attorney General before the municipal prosecutor, before the municipal judge, -- at that time it was denied, it was raised again before Judge Shebell, again the same category, when we appeared before Judge Shebell at a later time, and again it was raised at the Appellate Division level in Romano.

Obviously therefore, if it please the Court, it seems extremely clear, that the circumstances of events which would be brought before the municipal court are the proper ones for the court to consider. Incidentally, we don't have any transcript here, and we have no preliminary conference where the issues are set out in a pretrial memorandum.

Had the court had that, tomorrow morning, -- on a Saturday of course, the Court would have been in a position where the issues would have been certainly categorized. Incidentally, when he was to issue the order, for the pretrial

memorandum, - Mr. Stalford and the County Prosecutor, if they wanted to intervene then would have intervened them.

If there was an issue which was not in the category of evidence, --

THE COURT: He didn't know about it then Mr. Moore. He said he didn't learn about it until after the order was signed.

MR. MOORE: Judge, at least two of these cases have been up here already.

THE COURT: How can you intervene when you don't know something is happening?

MR. MOORE: Two of these cases, have been up here already.

THE COURT: All right, anything else Mr. Moore. I think you have covered everything.

MR. MOORE: Thank you Your Honor. And how you intervene if it please the Court is by making certain that the municipal prosecutor or the county prosecutor wants the municipal to notice him of certain events. That is the way you do it? It is not the responsibility of the defendant. Thank you.

THE COURT: I agree with that.

MR. STALFORD: Your Honor, may I respond briefly, -- very briefly.

THE COURT: Yes.

MR. STALFORD: I would bring to the Court's attention that the Lopat decision which Mr. Moore cites predates Romano vs. Kimmelman, and in addition is an Appellate Division decision, which would be totally overruled in any way that conflicts with Romano vs. Kimmelman.

With regard to supercession, -- supercession is not done with the intervention of any judge. Supercession because both the Attorney General and the County Prosecutor are constitutional officers, -- does not require the Court's intervention, aid or assistance. It is only if intervention in the case is required, -- then application to the court is necessary.

THE COURT: Maybe after what you have heard here today, you might want to do that.

MR. STALFORD: That may be, -- with regard to Mr. Moore's requirement, -- again, he misstates, misrepresents what I put in my brief. I made it clear that the beginning of this hearing, -- I put in my brief what I did only to note why time limits were not met.

I was not noticed, I, in no way, implied, inferred or required Mr. Moore to notice my office. If he didn't and he violated a rule that is one thing, but I haven't said that in this case. Mr. Moore seems to keep thinking that I did.

And on that same line, if Mr. Moore is insisting that the Attorney General has the responsibility for the integrity of this machine, it seems to me, and he cites the statute

to that effect, -- it seems to me clearly the Attorney General should have been made a party to all of this, -- and they were.

As far as prejudice to his defendants because we are going to try a matter in municipal court, -- or something, -- I don't understand his argument.

THE COURT: Prejudice says that they can't afford \$28,000 separately. They can maybe afford it jointly. So, he wants to try them together and split the expenses. That is prejudice.

MR. STALFORD: Well, but he says it in terms of, I want to have the hearing on Saturday. It seems to me Judge, that Saturdays occur once a week, and that if an expert witness from Nebraska, --

THE COURT: He didn't ask for Saturday, somebody else asked for Saturday.

MR. STALFORD: But he is pushing Saturday as the proper time. It seems to me that a Superior Court judge who hears a case five days a week, would be an easier forum to try a case like this, than a municipal court judge, who sits Saturdays.

THE COURT: I am not bringing the case up here Mr. Stalford.

MR. STALFORD: As far as 7:4-2f is concerned, it is clear that the intent of that rule has nothing to do with cases in separate municipalities. As raised in my brief, if we had four separate judges, -- could Judge Pappa

have done this? That is the criteria. If one case was in Belmar with Judge Broadbelt, and another case was in Manalapan with Judge Thinkler, and another case was in Middletown, with Judge Steib, -- could Judge Pappa have done this?

THE COURT: No, he did it because he is the judge

--

MR. STALFORD: No, and I submit absolutely not.

THE COURT: -- in all four of these courts, South Belmar, Deal and Allenhurst and Asbury.

MR. STALFORD: Right, but I say the criteria for whether consolidation be done has to lie in the sense of what I just put forth because these are limited, -- courts of limited jurisdiction. As the judge of any one town he has no jurisdiction over the cases in another town.

As far as the methodology I raised that, and that is all I have. Thank you.

THE COURT: I didn't hear the last thing you said, I am sorry.

MR. STALFORD: I don't have anything further. I was about to start another point.

THE COURT: Anything else Mr. Butler?

MR. BUTLER: No, Your Honor.

THE COURT: Anything else Mr. Moore?

MR. MOORE: No, Your Honor. Thank you.

THE COURT: The prosecutor of Monmouth County seeks leave to appeal, *nunc pro tunc* from an order of the Asbury Park Municipal Court dated May 20th., 1988. Municipal Court Judge Pappa consolidated four DWI cases originating from four separate municipalities; Deal, Allenhurst, South Belmar and Asbury Park.

The order sets a date for a pretrial conference, required pretrial memoranda from each party and set a date for the preliminary pretrial hearing. The procedural history of the cases are as follows, -- Andrew Downie, Daniel Matthews, Martin Marotta and Charles Carroll have each been charged with a violation of NJSA 39:4-50, driving under the influence of alcohol.

They were charged in separate municipalities of Asbury Park, South Belmar, Deal and Allenhurst. Each defendant is represented by Francis X. Moore. Judge Pappa is the municipal court judge in each of these municipalities.

The defendant moved before Judge Pappa on March 1988 to consolidate the four cases for the purposes of a pretrial hearing on the issue of admissibility of breathalyzer reading evidence, to exclude all evidence of the breathalyzer test results at a trial of their respective cases for pretrial conference and for a hearing. On May 20th., 1988 Judge Pappa signed the order consolidating these matters.

The appeal before me today raises four issues, -- I will address each one separately. First, does the Monmouth County Prosecutor have standing to represent the State on this appeal? Rule 7:4-4b states in pertinent part, "Ap-

pearance at prosecution. Whenever his judgment, the interests of justice so require, upon the request of the Court, the Attorney General, County Prosecutor, Municipal Court Prosecutor or municipal attorney as the case may be, may appear in any court on behalf of the State or the municipality and conduct a prosecution of any action.

But if the Attorney General, County or Municipal Court Prosecutor or municipal attorney does not appear, any attorney may appear in behalf of any complaining witness to prosecute the action for and on behalf of the State or the municipality."

It is clear from this Rule that the Monmouth County Prosecutor could have appeared in this action and prosecuted the named defendants. The County Prosecutor has the power to represent the State on all matters arising in Monmouth County.

Rule 3:24A states, "Either the prosecuting attorney or the defendant may seek leave to appeal to the Superior Court, Law Division from an Interlocutory Order entered before trial by a court of limited criminal jurisdiction.

Prosecuting attorney is defined by Rule 3:23-9c as being the County Prosecutor in all the cases. Therefore, this Court is satisfied that the Monmouth County Prosecutor is the proper entity to represent the State on this appeal. The County Prosecutor is the entity that usually undertakes the representation of the State's interest when a matter is appealed.

The case before me today is no different. Defendant's contention that only the municipal prosecutor could have

sought leave to appeal this order, -- appeal this order is without merit. Even if one of the municipal prosecutors had requested leave to appeal in the Superior Court, their interests would still be represented by the County once the matter was brought to Freehold.

Second issue, -- should leave to appeal *nunc pro tunc* be granted. Rule 3:24c is clear. Appeals pursuant to this rule shall be taken within ten days after the entry of such order. Judge Pappa entered his order on May 20th., 1988. The Prosecutor's Notice of Motion was dated June 10th., 1988.

The Appellate Division in State v. Burton, 207 NJ Super, 53 Appellate Division, 1986 however held that Rule 3:24 may be enlarged. The State is therefore not confined to the ten day time limit set forth in the rule. The Court did state that, the longest extension should only be twenty days. Thus it would appear that the State is within the time frame set forth by the Court in Burton.

Accordingly, I grant the State leave to appeal *nunc pro tunc*, to challenge the May 20th. order.

Third issue. Should these matters have been consolidated? Rule 4:38 states in pertinent part, "Actions involving a common question of law and fact arising out of the same transaction may be consolidated by the Court."

Further, Rule 7:4-2a which defendant relies upon states the Court may order that two or more complaints be tried together if the offenses arose out of the same facts and circumstances.

Defendant alleges that these matters should be consolidated because they involve common questions of law. This however is not enough. For a court to permit consolidation, there must exist common questions of law and fact. These four matters each involve different defendants in different municipalities, different police officers, and presumably different blood alcohol readings, and presumably different circumstances arising during the arrest.

I therefore find that it was completely incorrect of Judge Pappa to have consolidated these cases. There is absolutely no factual similarity alleged between them. The cases are related, but for defendant counsel's intent to raise the same defense. This is not sufficient for consolidation.

Accordingly, I hereby deconsolidate these four cases. The cases should now proceed in separate trials in each of their respective municipalities.

Four, is the municipal court the proper forum for a hearing on the issues raised? The State requests that I preclude the applicable municipal courts from holding hearings on the scientific reliability of the breathalyzer in question.

The State relies on a recent Supreme Court decision in Romano vs. Kimmelman, 96 NJ 66, 1984 which determined that the Model 900, 900A breathalyzer machine should be considered scientifically reliable for the purposes of determining the contents of blood alcohol.

The Court stated, "Such scientific reliability shall be the subject of judicial notice in a trial of all cases under 39:4-50." This Court finds merit in the State's argument. It is clear that the defendants raised more than just one defense with respect to the breathalyzer.

The Order of Consolidation states, "The above entitled actions have come on for pretrial hearing as to Rule 7:4-2D and 3:12-1, and it appearing to the Court that all of them involve claims and defenses based in each case upon one, accuracy and reliability of breath testing machines, methodology, science and fact, and two, incompetency and inadmissibility of breath testing procedures and systems."

I find that the defense of the incompetency and inadmissibility of breath testing procedures is clearly an initial issue that is within the jurisdiction of the municipal court. The Romano cases strictly limited its holding to the scientific reliability of the machine.

This issue should not be raised in any trial court pursuant to Romano. I trust that Judge Pappa will rule accordingly under a Rule 8 hearing.

As for the second issue, I decline to order Judge Pappa on how to rule. Evidence will be presented to him. He will consider testimony, and it is the municipal court's function and decision as to the competency and admissibility of the procedures used, not this Court's.

If the County Prosecutor is concerned with what takes place in municipal court, he certainly has the authority to supercede the local prosecutor and prosecute the case.

Accordingly, I deny the State's request to preclude the municipal court from conducting the requested hearings. It is their decision as to whether certain evidence is admissible pursuant to the dictates of Romano.

In conclusion, this Court having granted the Prosecutor leave to appeal does hereby deconsolidate the cases herein. These matters should not proceed separately in each district municipality. It will be up to Judge Pappa to decide whether the evidence submitted by the defendant is admissible pursuant to a Rule 8 hearing.

Mr. Stalford, I will ask that you prepare the form, -- you submitted some order. I guess I can probably use the one you submitted, and fix it up. Well, actually your order is only for the *Nunc pro tunc* appeal. I think I will need another order on the other two issues.

MR. STALFORD: If Your Honor would like we will prepare the order. Normally, the County Clerk prepares the orders on appeals, judgements on appeals.

THE COURT: I want you to prepare this order. This is a little too sophisticated for the County Clerk.

MR. STALFORD: I will do a new order encompassing all four aspects.

THE COURT: All of it, fine. I would like that order today. There is supposed to be something tomorrow, and let Judge Pappa know I have signed an order.

MR. STALFORD: That has been adjourned Judge.

THE COURT: Oh, has it been adjourned, okay.

MR. BUTLER: Yes, Your Honor.

THE COURT: Then, submit the Order under the five day rule, within ten days of today. I will -- I think you ought to call Judge Pappa and tell him what took place Mr. Stalford.

MR. STALFORD: Yes, Judge.

THE COURT: Anything else Gentlemen?

MR. MOORE: Your Honor, May I request leave to appeal at this moment, informally, or should you require that that be done formally.

THE COURT: You will have to go to the Appellate Division. They give you leave to appeal Interlocutory Orders like this. I don't. After the order is signed, go to the Appellate Division.

From here though Mr. Moore, you are to go to the Middletown Municipal court. They are holding some cases for you.

MR. MOORE: They are holding twenty-two Your Honor, and I understand that you were gracious enough to have them hold them until ten o'clock, and I sincerely appreciate that.

THE COURT: Between ten and ten-thirty. You should make it. It is nine-thirty. Thank You.

\* \* \*

August 9, 1988

STATE OF NEW JERSEY:

:ss

COUNTY OF MONMOUTH:

I, THERESA GRIBBEN, Certified Transcriber do affirm that the foregoing is a true and accurate transcript of the proceedings in the matter of State vs. Downie, Matthews, Marotta and Carroll, heard in the Monmouth County Superior Court on June 24, 1988 and recorded on Tape No. C-74-88, Index No. 0008 to 1940 of that Court.

/S/

ASBURY PARK MUNICIPAL COURT  
MONMOUTH COUNTY, NEW JERSEY  
DOCKET NO. \_\_\_\_\_

STATE OF NEW JERSEY )

Plaintiff )

vs. )

ANDREW DOWNIE )

Defendant )

TRANSCRIPT OF

RECORDED PROCEEDINGS

PLACE: ASBURY PARK MUNICIPAL COURT

1 Municipal Plaza

Asbury Park, NJ 07712

DATE: March 30, 1988

BEFORE:

HON. DONALD J. PAPPA, J.M.C.

TRANSCRIPT ORDERED BY:

MARK P. STALFORD, ESQ., Assistant Prosecutor, Mon-  
mouth County Prosecutor's Office.

APPEARANCES:

FRANCIS X. MOORE, ESQ., Attorney for the Defendant.

JAMES BUTLER, ESQ., Prosecutor for the City of As-  
bury Park, Attorney for the State.

MR. MILLS, ESQ., Prosecutor for the Township of Deal.

THE COURT: This is in the matter of State vs. Downie.

MR. MOORE: Correct. Your Honor.

THE COURT: And others.

MR. MOORE: And others.

THE COURT: I think we ought to try and make as good a record as we can. So it might be better, if you can, you could sit at the counsel table as close to the make as possible so that we .. without shuffling papers and --

MR. MOORE: If Your Honor has problems hearing me I'll be happy to speak louder.

THE COURT: I don't have a problem hearing you I just want to be certain that nothing interrupts this transcription.

MR MOORE: I would respectfully submit to the Court. Francis X. Moore, 211 Maple Avenue, Red Bank, New Jersey. The application pending before the Court is an application under 7:4-2(f) dealing with consolidation of certain matters in which the issue is identical. The matter which are pending, if it please the Court, are pending in other Municipalities in which Your Honor sits. The Municipal Court Judge knows municipalities. The matter before Your Honor in this Municipality is State vs. Andrew Downie. In that manner, if it please the Court, the defendant was tested on a breathalyzer machine and there was a result. The second matter is the matter of State vs. Charles Carroll. He was apprehended in Allenhurst.

THE COURT: Excuse me. How do you spell that? Carroll?

MR. MOORE: C A R R O L L. He was apprehended in Allenhurst, if it please the Court, for a violation of 39:4-50, was in fact tested on a 900A. The next matter is the matter of State vs. Martin Marotta, M A R O T T A, arrested in Deal, New Jersey, for a violation of 39:4-50. Similary tested, if it please the Court, on a breathalyzer machine. The fourth matter is the State vs. Daniel Matthews, in South Belmar. He was apprehended in South Belmar, was tested in Belmar, charged with 39:4-50 and on a breathalyzer machine. I would respectfully submit that I've made an application before the Court that these matters be consolidated for the purpose of the pretrial hearing. The purpose of the consolidation, if it please the Court, was the convenience of Your Honor together with the convenience of my clients to the extent that the issues which would be presented would require the testimony of expert witnesses. Therefore obviously under the circumstances the experts themselves, number one, because of their expense in bringing them into the confines of the State are reasonably expensive. And obviously under the circumstances I would respectfully submit my inquires clearly establish, if it please the Court, to bring all of the necessary experts in to talk about the issues and discuss the issues with the Court would be about \$28,000.00. Under the circumstances, if it please the Court, short of a 1983 class action, which I tried once before but was found to be somewhat lacking since the Supreme Court for this State found that as an individual practitioner they believed the *pro bono* work was part of the necessities of requiring that we maintain a license rather than be a candy store operator. I say that cynically and intentionally.

In any event, if it please the Court, I would respectfully submit that the issues which would be presented to the Court are three-fold. The Court may consider them to be four-fold, but the three-fold issues: one, is a breathalyzer machine an approved machine in the State of New Jersey in consequence of the April 7th, 1983 change in the statute requiring a *per se* violation. To wit does that not therefore create a criterion under the New Jersey Administrative Code 1351 that the machines which were examined for use in accordance with 39:4-50.3 and approved by the Attorney General, sufficient in order to be able to be accepted by the Court in accepting the determination as to a *per se* one zero in order to determine guilt or innocence. Obviously, if it please the Court, the statute which has added the provisions to the *per se* in April 7th of 1983, creates two sections or violations of the 39:4-50 section of the statute. One is what's commonly called driving under the influence and the other is what's commonly called driving with a *per se* one zero reading on a breathalyzer machine or any machine which would be properly approved. In order to get the machine approved obviously I'm sure Your Honor recalls that under 1351 there's certain criterion, the application, the evaluation, the recommendation and the administration of the machine itself.

The second issue which I obviously would want to be in a position to present to the Court is the issue with relationship to the reliability of the machine. I would submit to the Court that as a result of our investigation the machine is probably as valid as some machine that you stick into Resorts or the Trump Plaza. You probably have about as much capacity to be able to come back with a true reflection as to what your alcohol intake had been and

what your condition was at the time of operation as you would by pulling four sevens on the International Machines currently held in Atlantic City.

I would respectfully submit to the Court the issues with relationship to reliability are multi-fold. Number one is the issue with relationship to the subject, although I'm sure Your Honor can take notice of the fact that for an extended period of time starting at 1803, a fellow by the name of Dr. Henry came up a provision asserting that the 2100 to one in fact was the breath partition co-efficient ratio in the average individual. The difficulty with the *per se* is that the *per se* doesn't convict average people it convicts everybody. Under the circumstances it seems clear therefore that if the criterion for determining the precision of the machine was determining whether or not it applied to the average person in society then somebody is going to jail improperly. Obviously under the circumstances it would be those people who would be below the average. Obviously, advancing science in this field has obviously come to the conclusion that the average of the 2100 to one which may have been devised by a formula in 1933, because of the improvements in society and the healthful conditions under which we live, I would respectfully submit that the 2100 to one is a mere figment of the imagination of the individual who created it in 1933.

The important part of the use of the machinery in the State of New Jersey is that they are built through the form of instrumentation so that they in fact rely upon the basic foundation of the 2100 to one. To wit the 52.5 milliliters of air which is blown into the machine so that the piston can rise to grasp the magnet in order for the test to be completed is exactly one fortieth of the 2100

to one. Obviously therefore if the person were under the 2100 to one, although that portion of society which is below the average who has a better lung situation than the individual who is 2100 to one, he is being convicted improperly because in fact the machine is coming up with a reading of one zero or above when in fact the measurement by which the scientific community is accepting his breath is accepting it and multiplying it with a higher number therefore giving him a higher result. He therefore is guilty according to the terminology of the statute but in fact, and it is a matter of the scientific community's present state of knowledge, he obviously is not guilty.

In order to give Your Honor some idea, I'm sure Your Honor has been familiar with the fact we have recently a case decided in this State called Windmere (Phonetic) vs. International Insurance Company by the learned Justice O'Hearn (Phonetic) and in the writing of the opinion he clearly recited that whenever you're dealing with the reliability of any machinery including the rape syndrome and all of that and women's syndrome and/or for that matter lie detector test, that the criterion that the Court should concern itself with is three-fold. One, the testimony of experts in the field who are acknowledged to be experts in the field, and in that regard within the past year a Mr. Michael Hestalda (Phonetic) from the University of Washington Medical Center reported that the errors which were not corrected in the machine itself were of such a nature that the machine itself is nothing more than a gambling device. Dr. Gerry Simmons (Phonetic) who is in the University of California at Cal Tech Hospital, has obviously come out reflecting if it please the Court, with

scientific community's considered determination as a result of examination of all of the 2100 to one.

Concluding, if it please the Court, that anyone who is tested during what is considered to be the absorbed phase of alcohol in fact is receiving a high reading which can be 150 to 50 times higher than it actually would be when the blood and breath are equilibrium.

I'm sure, if it please the Court, after the opportunity to explain to the Court the circumstances of the motion which is being made before the Court and to produce the testimony of the experts, any one of whom I think could via compendium place before the Court the status of the knowledge in the advancing science in 1988 versus 1933. The machine is 50 years old. The theory is 50 years old. In the 50 years the community in this country has increased its capacity healthwise through either exercise and/or dietary measure that it seems clear to the advancing science at the present time that there is only nine percent of society that is 2100 to one, versus 85% in 1933. Now whether or not that means that if we jog our lungs improve or whether or not we run the distances of Sebastian Coe (Phonetic) our lungs improve, I don't know. I suspect that as lawyers we have to rely upon the scientific community. Within the past year or two there have been certain considerations which Justice O'Hearen speaks of in Windmere, which are relevant to the issue as to whether or not the Court can in fact believe that there is a tolerance in the machine. In addition whether or not there is a tolerance in an individual. When we speak of tolerances we really are speaking of weight of the evidence and not in fact whether or not the evidence is admissible.

That brings me necessarily, if it please the Court, to the third criterion. Therefore if I set them up chronologically, approval of the machine is the first consideration because without approval you can't use it under our statue 39:4-50.3. Reliability is the second. Obviously that's State vs. Johnson and Ramano vs. Kimmelman and Windmere vs. International Insurance. The third, if it please the Court, is the admissibility. In the admissibility under State vs. Johnson, something seems extremely clear that you don't get to the issue of admissibility until you get past the issues of approvability and reliability. If you get to admissibility you then have four criterion. One, was the operator qualified. Two, was the machine in proper working order at the time it was used on the defendant. Three, was the chemicals which are used in the machine mixed in the proper proportion. And four, was it in fact operated properly in accordance with the procedure of the manufacturer.

At the present time obviously, if it please the Court, you have to consider those issues with relationship to a *per se* versus the consideration given to them prior to the *per se*. Obviously I'm sure Your Honor can take notice of the fact that we have not had any cases deciding the issue of reliability since the *per se* became the law. Obviously Johnson was decided in '76, Ramano was decided in '84. Although it was decided succeeding the *per se*, it has been begun before the *per se* and the issues in Ramon deal with issues prior to *per se*. The point being that there obviously is a different legal consideration as to whether or not corroborative evidences and the acceptability of machinery in corroborative points of view rather than presumptive points of view, conclusively incidentally, whether or not the Court can consider that.

There was the only case in which the Court could take notice of the fact that the Supreme Court of New Jersey was concerned and that was State vs. Tishio. In Tishio Your Honor will recall, I'm reasonably certain, that the Court's consideration was whether or not the statute itself was vague. Believe it or not and ironically, although the United States Supreme Court considered issues out of California in the vagueness of the *per se* statute, our Supreme Court admitted that the vagueness of the statute provoked them to believe that the test results within a reasonable period of time after operation was satisfactory. Although I personally may, and professionally may, be of the opinion that the only way they decided that was by making sure that they number one, avoided having any knowledge of the actual physiology of alcohol and the bodily functions at the time of the testing, or they were so bent upon the seriousness of their concern that drunk drivers were operating throughout the United States that they politically made a determination to convict people. I would respectfully submit that if they did it in the later category, I would respectfully submit that it is professionally offensive to me. I am convinced they did simply because if they examined the current expertise and the current treatyasis from the experts they would have come to the conclusion that they should have reconsidered the application of the use of the machine in the State of New Jersey.

Now, the confusion that exists under Windmere is .. the second criterion under Windmere is that there be sufficient scientific treatyasis in which the scientific community has espoused a different position from what it was before. The strange part of this State, I would respectfully submit, is we approve something and we approve

it forever. The strange significance of that for your own information, and I'm sure Your Honor can take notice of it, State vs. Johnson dealt with a machine called a drunkometer (Phonetic). The drunkometer, three years after New Jersey State Supreme Court said that's a perfect machine, the National Highway Traffic Safety Administration suggested that 11 States remove them because the basis upon which the presumption was coming about, which then was corroborative, was totally improper because it was on the base of the CO 2 and the aveola (Phonetic) lung and that they were incapable of making a judgement that everyone's aveola lung was identical. And they therefore removed the drunkometer on the National Highway Traffic Safety Administration qualified products list. They removed it from all 49 states, except New Jersey obviously was a stalwart. To this day State vs. Johnson is a law. That means, believe it or not, that if I walked in there with a Pathmark drunkometer and had somebody with a one zero he's guilty in the State of New Jersey because our Supreme Court has not taken into account the changes in the science community to the extent that those changes may reflect that something which may have been considered to be valid is no longer valid.

The problem is creates it the law is somewhat obvious and you lived with it today. I just saw it happening today. From the lawyers point of view they recognized, if it please the Court, that there's a tolerance in the instrument, that there in fact is a subject tolerance, because some people obviously are in better physical shape than others. You're looking at one in which somebody obviously is in better shape than I am. I probably, if I were guessing, would say I'm a 3600 to one. My learned adversary is probably

1200 to one because he obviously is in better physical shape. What happens when lawyers and Judges get to the point where we recognize that society has changed to the extent that those considered principals which existed back in the 1930's longer exist. I would respectfully submit to the Court that the purpose of this motion is to take away the shame from our faces.

Obviously, if it please the Court, many, many years ago in unsinkable ship sank. If we relied upon all of the engineers and all of the scientists we would have been convinced the Titanic would have made it to the shores of New York. It didn't. That tragedy took 1,500 lives. More recently if we relied upon the engineers and the greatest engineers in the world and the greatest scientists in the world, I reasonably suspect that nine people who were on the Challenger would have been alive today. I'm only saying to the Court that there is no question but that as a matter of law and as a matter of fact there are changes in the scientific community which the Court should take notice of. Whether or not that change is at a .165 because somebody in the scientific community says so or not is really of interest to me. And that is why, if it please the Court, if I am permitted to argue the issue before Your Honor the three issues which of necessity must be encompassed, and my ego tells me that I'm capable of doing that although I reasonably suspect that there may be some accusation that my ego is unnecessarily sliced in the improper position. I invite that, I suspect, if it please the Court, that the invitation between and amongst the legal community to produce the necessary scientists to make certain that we can at least guide our Supreme Court to make them understand what the machine is all about and how the changes in the scientific

community are of determined interest to the people who are going to jail. Obviously the detriment is that dying in the Challenger is more severe, or dying in the Atlantic as a result of the sinking of the Titanic, then going to jail. It may be to you but it isn't to me. As far as I'm concerned we are killing people by sending them to jail. I fully understand that obviously I will be looked at by certain social groups as though I am in fact contemptuous. I'm not being contemptuous. I'm attempting to act intelligently instead of standing up like a cheerleader and saying, let's take everybody off the road, let's take all the licenses away. Because I would respectfully submit that at this moment I'm capable of proving that no matter how many drinks you have at some time during the physiology of alcohol you will be at one zero. I can even prove I would respectfully submit to the scientific community that it doesn't even take alcoholic beverages you can buy in a liquor establishment, that it can be done by any other means. And it is a matter of fact I will respectfully submit the scientific community knows that. What I need is the opportunity to produce it for the Court to be able to fully examine it.

I have selected Your Honor, there is no question about that and I'm sure I'll be accused of that, I did it purposely and I have no reason to believe that by saying it to Your Honor, that the record would be reflective of any unfavorable position. Number one Your Honor on a frequent basis has had his curiosity peaked as to why you should accept .165 versus .03, that Dr. Davosky (Phonetic) as the expert, says .. in Nebraska, says that the subject index is to reduction, or even .055 that Dr. Dabowsky testifies to on a combination of the errors that may be inherent in the machine and the subject. What I'm saying

to Your Honor is all of that is poppy cock until the lawyers and Judges get to the point where they attempt to be able to examimne science on the basis that if there is in fact a per se violation and somebody is going to jail we are the last protection. We as the lawyers have to be in the position to say that the scientific community, if they were so good, if they were so outstanding that we can give credibility on a permanent basis to a machine, then obviously under the circumstances I would respectfully submit that when they place me in the ground at least I will have tried to make certain that the legal community has impressed upon the Judicial community that there is in fact an unreliable instrument that's placing somebody in jail and that's wrong.

Obviously in any one of these individual sees we all know that Your Honor has the power of jail. Does that mean that Your Honor can contemplate that if because I have a 1200 to one ratio and at the time they test me which is such a short period of time after you consume the alcohol and you blow a four zero which incidentally in all science .. in all of the scientific community is proof of the fact that you are comatose. Barring the recognition by Your Honor of judicial notice, if you ever watched the John Wayne movie in the civil war, we watched them on television, we watched them in the movies, they feed him full of alcohol to the extent the original anesthesia in the medical science put him at a point where he was comatose to three seven and you could cut his leg off and he would feel it presumably by simply putting a piece of wood between his teeth. If that's true then how in heaven's name can you blow a four zero or a three seven or a three eight and walk and not be capable of being a star performer in a John Wayne movie. Now I understand

that I may use extremes in order to make the point but I submit, if it please the Court, that it was the extreme that created it in the first place and what I'm attempting to do is to take away the extremes and bring it down to reality.

Now if you get down to Widmere to find out who the experts are that's relatively simple. I'm sure you have heard me mention them on frequent occasions. Dr. Dabowski, Kirk Dabowski of the University of Nebraska, he is recognized throughout the world as an authority on the subject of alcohol, the physiology of alcohol and the instrumentation on the breath partition co-efficient ratio. The difficulty, if it please the Court, is that obviously when you get to be considered an expert, short of the definition of an expert as simply somebody that comes from out of town with a briefcase, he must come with a suitcase, because the cost of Dr. Davosky, I recently suspect is somewhere between seven and \$9,000.00 to bring him to Asbury Park. I can convince him as to how beautiful it is on the boardwalk, but I suspect that that would not cause a reduction in the fee which he requires in order to be transported here from the University of Nebraska. From the point of view of Dr. Hestalda, although I probably could convince him to visit his relatives in Brooklyn, New York from the University of Washington Hospital, I suspect that his like for his relatives would also not provoke him to reduce his fees to the extent that I would be capable of being able to afford him. There is of course probably somebody who can compile all of these people together who would be acceptable to the Court, by the name of Dr. Janson (Phonetic) who is in Minneapolis, Minnesota. Who is the current president of Forensic Science Institute. Who has in fact been employed by the government at

extended period of time testing machinery of this nature and he would be in a position to be able to offer to the Court at least some realistic scientific evidences that this machine is nothing more or less than a one armed bandit. And when we call it a dial-a-drunk I reasonably suspect that any one of us who knows anything at all about the machine, including the operators probably here in Asbury Park recognize that if I want to I can get you on that machine without any problem at all. All I have to do is keep turning the dial on the calibration wheel until it reaches the point where you're over 10. I would respectfully submit that I was still a law enforcement officer I would insist that you devise some method in which I couldn't be accused and have my integrity asked upon. I happen to be one of the ones that probably has asked upon the integrity of many police officers on a frequent basis. I don't like it and I suspect that we'd better get to the point where we find instrumentation, if we're going to rely upon it, that is more clear than what we presently have.

Incidentally it's now been something new, in State vs. Kelly we reduced the battered woman syndrome by alleging that women could not have a syndrome as a result of being battered. Presumably although I suspect that the general community would come back and say that there is such a thing and that women are entitled to a defense of being in a position to be able to say I have a battered woman syndrome. That is why I hit back. I don't know if they produce the experts, if that would be acceptable but right now in New Jersey it's not. Why? Because there is not sufficient expertise to assert by experimentation that there's enough presently in existence.

Incidentally the learned Judge Yacarenno (Phonetic) decided State vs. Brian (Phonetic) which basically is the same issue that we're talking about when I produce experts for Your Honor. Brian of course said when you're dealing with the transference of a scientific community's judgement into the legal community you deal with four issues. One, you propose a theory. Two, the scientific community experiments with that theory until they can come to some conclusion. Four, when the scientific community comes to that conclusion they have to satisfy the legal community, provided it is proof beyond a reasonable doubt versus corroborative proof. We have never reached proof beyond reasonable doubt with that machine. I would therefore respectfully submit that so long as you can stand before the Court, my learned adversary can stand before the Court and I can stand before the Court and say that there are experts that say that .165, there's a tolerance in the machine, there's something wrong. I would respectfully submit that what's wrong is we haven't given the serious consideration to the sure of the machinery that out to be given and I want to give it here in Asbury Park. Thank you, Your Honor. Sorry it took so long.

THE COURT: For the record, Mr. Mills who is the prosecutor in Deal has arrived and I'd like to note his appearance for the record. Mr. Butler, do you wish to be heard?

MR. BUTLER: Only briefly, Your Honor. I have spoken with Mr. Moore, I have spoken with Mr. Pascarella (Phonetic) at his office and I have spoken to Mr. Specket (Phonetic) at his office and I've had an opportunity to speak to Your Honor with reference to the issues that are here before Your Honor today. And that is the con-

solidation of the cases in basically four of your municipalities.

With all due respect to Mr. Moore I'm not that much concerned with the approval. I'm not that much concerned with the admissibility. The reason why I'm concerned with this particular situation is for the reliability. The argument that he espouses is on the 2100 to one ratio. For the record luckily today I had the opportunity to speak to Dr. Tindal (Phonetic) of the State Police on another matter that I had pending in Neptune and I questioned him as to the particular considerations that we were concerned about with reference to the 2100 to one argument. Dr. Tindal, who is a State Police expert I submit, Your Honor, told me that the 2100 to one is a very, very reliable type of situation and he says if an individual has what he believes to be a .16, if the ratio is not 2100 to one and there is some other ratio, that there can be a discrepancy up to a .04. So as far as it being a .16 it could be a .12, Your Honor. There is some questions that have to be answered with reference to this matter.

I would personally both as a prosecutor and as a defense attorney, Your Honor, like to have those particular questions answered. If the machine needs to be approved again. If there needs to be corrections made in the machine. If the machine needs to be revamped 100%, we need to know that so that we can avoid these particular situations. But we don't know that unless an argument can in fact be espoused as to the 2100 to one. Mr. Moore brings up an interesting issue with reference to the state of exercise in our communities these days that would in fact effect the 2100 to one ratio. I don't know if it would, I don't know if it would not, but I think we're now at

a point in time where we can in fact find that out. So why not find it out one and for all. We have three or four cases in four different municipalities, why not find it out. I have no objection to the same, Your Honor.

I think I will .. for the record I will give notification to the State Police, I will give notification to the Attorney General's office of the circumstances that are going to be happening in Asbury Park and I'm sure Mr. Moore will give the notification the Attorney General's office as well because as usual they want to get involved in any situation that's going to involve this much of the machinery that the State has put out that has been approved by the Attorney General's office. So other than that, Your Honor, I have no objection to the consolidation. I have no objection to the matter being heard in Asbury Park because I have legitimate questions and I think those questions can in fact be answered. They may be answered to the positive for the State. They may be answered to the negative for the State, but I think those answers have to be made and why not do it in Asbury Park.

THE COURT: Mr. Mills, did you want to be heard?

MR. MILLS: Judge, I agree that the questions exist and they should be addressed and I certainly have no objection to them being addressed in Asbury Park if everybody is agreed that a hearing and a determination on a Municipal Court level is the right way to do it. I would just as soon Mr Butler did it in Asbury Park as I had to do it in Deal and I have every confidence in his ability to handle it. I wonder though whether it might not be a bit of a waste of time of time in a sense. It is in effect an attack on a machine which has been ap-

proved by the State in administrative regulations anyway, and I don't remember whether it's specifically approved in a statute, but in the administrative regulations any how it's approved. I would be surprised if a determination by this Court holding it to be unreliable would not have to be followed up by some sort of a hearing at a higher level as was done in the Ramano case as I recall, with Judge McCann (Phonetic) being assigned to make .. to have a preliminary hearing basically and make specific findings of fact and I suppose that some sort of thing could be achieved there by Mr. Moore handling this motion to suppress breathalyzer readings generally and bring it into the Superior Court and we might be short cutting the process a little bit if he chose to do it that way. But I assume he's considered that possibility and for reasons of his own thinks it's best to start at the municipal level. If Your Honor thinks it's appropriate to do it I certainly don't have any objection to a consolidation here in Asbury Park.

MR. BUTLER: Your Honor, just for the record, I agree with Mr. Mills in his representations as to whether or not we would be spinning our wheels in Municipal Court. It might not be a bad idea to have some sort of a suppression at Freehold or something with reference to the same thing that was done. And as Mr. Mills indicated maybe Mr. Moore has a reason for doing it this way and I think he does and I'd like to hear it.

MR MOORE: Let me respectfully submit two methods in which you can attack a pre-trial. Any of the evidence that's attempted to be produced by the State or county or whoever you make your motion at for a 2:3-13(1)(B) motion, pre-trial hearing. The other of course is a 3:5-7.

3:5-7, if it please the Court, deals basically with the Fourth Amendment of the United States Constitution, unreasonable searches and seizures. What I'm saying to Your Honor is I'm not arguing that it's an unreasonable search, I'm arguing that the results of the seizure .. in other words what I'm saying is constitutionally the police department has the right to determine whether or not somebody is under the influence. What I'm arguing is the method that they are using in order to determine that. So it is not a 3:5-7.

For historical purposes, Your Honor will recall if you read in 192 .. strike that, I think it's 196 of the Ramano vs. Kimmelman Appellate Division Judgement that issue did not go to the Supreme Court. When the Attorney General's argument was why not argue it at the Superior Court level, the Appellate Division said because he argued it where it should have been argued, in front of the Municipal Court on a pre-trial application. That, if it please the Court, is recited very specifically in the Appellate Division Judgement in Ramano. Secondly, if it please the Court, is Windmere vs. International. If Your Honor has been privy to a full examination of Windmere, Your Honor will recall that Justice O'Hearn said the proper method by which this should in fact be considered is the Court of the original jurisdiction by Rule a hearing. That's exactly what it said.

Obviously therefore, if it please the Court .. incidentally, the alternatives that I'm offering are not like I'm afraid. Let me clearly put in the Court's mind that Your Honor at one time said, why don't you try them during the trial. Certainly if I did, if it please the Court, we would run for time immemorial with Mr. Moore producing the same expert because at the conclusion of that trial, if I were

capable of causing the Court to believe that the approval which may have been granted was granted as corroborative proof not precise as to the .10, that the reliability didn't exist or that it was inadmissible and you found my client not guilty, I have done nothing except for that single client. I might suspect, if it please the Court, that if I tried Downie I'm getting there. I would respectfully submit that Downie, in my own estimation and my own professional opinion, is a breeze.

Obviously, if it please the Court, by resolving one I don't resolve the issue so I am offering the State an opportunity to say beforehand if you don't like what the Court does take me up. I am willing to go to any other Court. The difficulty with it, if it would please the Court, is that obviously under the circumstances, and again historically, Your Honor will recall in reading Ramano in the Supreme Court, the New Jersey Supreme Court decided the facts in Ramano on the basis of State vs. Lopat (Phonetic). Lopat was the case that was in fact decided by Judge Herran (Phonetic) in the Municipal Court and it was Lopat that the Appellate Division said the proper tribunal before which it should be tried should be the Court of original jurisdiction. Incidentally to the rest of the legal community my deepest apology because obviously what's going to happen is that they're going to be interested in attempting to be able to take the opinion of Judge Pappa if I'm successful and collaterally stop the use of it .. of the test of any other Court. What does that engender? Obviously if it please the Court, the immediate response of the prosecution to move the matter to the Superior Court level except that from my own clients point of view, I'll put it point blank, how can my clients get back the expenses of spending for an expert, not

through the criminal tribunal. But if Your Honor decides in my favor and agrees that the test should be excluded and the Attorney General lets 21 days go by without taking action against Judge Pappa or against Francis X. Moore, I suspect the action against Francis X. Moore shall be by surveillance rather than by oral argument. But be that as it may that's just in the side. In any event if they do obviously what I'm protecting for my clients is the right to be able to secure the benefits of the expenses for the expert.

THE COURT: Well I think you're going to be confronted with experts on the other side also

MR. MOORE: I hope so.

THE COURT: Or I am.

MR. MOORE: I .. as a matter of fact, if it please the Court, what I'm suggesting to the Court is under 3:13(1) which provides for the pre-trial conference as to who you intend to call, I am telling you now I have invited Dr. Saperstein (Phonetic). I have invited him to get on the stand and the Attorney General has attempted to quash even a Municipal Court subpoena to produce Dr. Saperstein. Incidentally from the point of view of Dr. Tindal (Phonetic) obviously counsel's comment about the experience with Dr. Tindal, I too of course have had experience with Dr. Tindal. I too of course have been in the position where Dr. Tindal admits that 2100 to one may not be it. The question is where is it. Well if they can't tell me and I invite them, as a matter of fact I will respectfully submit that if you held a conference and you said now counsel set out who you intend to call, how

you intend to call them, in what order you intend to call them and what documents in the scientific community do you intend to rely, I would invite it. I would only wish that I qualify as an expert from the point of view of the scientific community and I would invite them to question me. Of course Dr. Saperstein I would hope .. as a matter of fact to be perfectly honest with you, I insist upon Dr. Safferstein because I read his last text in the forensic science handbook of which he was the editor that said that alcohol has been a problem since the time of Noah, simply because, if it please the Court, that when Noah's ark eventually landed, not only was Noah and his family under the influence of alcohol but so to were the animals. His position, if it please the Court, was that the water was incapable of being drunk therefore they put a lot of grapes on board and 40 days later I would be most anxious in my imagery to create a giraffe walking off Noah's ark with a half a bag on, as they say in the pool room. But that's his position and I invite him here. I would like to know whether or not the giraffe was drunk on the 25th day or the 40th day.

THE COURT: I have no problem .. first I certainly am flattered that you have chosen this Court to .. as venue for this most important matter. It is important. No question about it.

MR. MOORE: It's a burden, Your Honor, don't misunderstand me.

THE COURT: I probably would have .. being younger, would have more time to do this, but I don't mind doing it. I would think, Mr. Mills, that Mr. Butler would welcome your participating.

MR. MILLS: I would be happy to assist.

THE COURT: I don't know that the ought to carry the burden by himself. You have Mr. Gallagher (Phonetic) who is South Bemar. Do you have a South Bemar matter?

MR. MOORE: Yes.

MR. MILLS: Yes, he does, Your Honor, And you have Mr. (Indiscernible - away from microphone).

THE COURT: I will grant your motion to consolidate and I will sign such an Order.

MR. MOORE: Immediately following that, Your Honor, would be the 39 .. the 313-1A motion for a conference and the setting of the date for hearing.

THE COURT: I was going to go off the record and talk about that, if you like.

MR. MOORE: That's fine with me. I just want to make sure that if we do that Mr. Gallagher and whoever else gets notice. That's all I want to be sure of.

THE COURT: Could you go off the record for a minute.

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I Joan Yanok, assigned transcriber, do hereby certify that the foregoing Transcript of Proceedings in the Asbury Park Municipal Court, on March 30, 1988, Tape No. 1569 is true and accurate to the best of my knowledge and ability.

June 27, 1988

/S/

SUPREME COURT OF NEW JERSEY  
A-167 September Term 1988

STATE OF NEW JERSEY,  
Plaintiff-Respondent,

v.

ANDREW DOWNIE,  
Defendant-Appellant.

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STATE OF NEW JERSEY,  
Plaintiff-Respondent,

v.

DANIEL MATTHEWS,  
Defendant-Appellant.

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STATE OF NEW JERSEY  
Plaintiff-Respondent,

v.

MARTIN J. MAROTTA,  
Defendant-Appellant.

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STATE OF NEW JERSEY,  
Plaintiff-Respondent,

v.

CHARLES F. CARROLL,  
Defendant-Appellant.

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SUPREME COURT OF NEW JERSEY  
M-730/1/2 SEPTEMBER TERM 1989  
29,818

STATE OF NEW JERSEY,  
Plaintiff-Respondent,  
v.

ANDREW DOWNIE, DANIEL MATTHEWS,  
MARTIN J. MAROTTA, and  
CHARLES F. CARROLL,  
Defendants-Movants.

This matter having been duly presented to the Court,  
it is ORDERED that the motion for leave to present supplemental oral argument (M-730) is denied; and it is further  
ORDERED that the motion to supplement the record (M-731) is denied; and it is further

ORDERED that the motion for an Order "precluding the Attorney General from discussing State v. Downie on an ex parte basis with any judicial authority before the determination by this Court" (M-732) is denied.

WITNESS, the Honorable Robert N. Wilentz, Chief Justice, at Trenton, this 31st day of January, 1990.

/S/

The Court having granted certification and having reviewed the briefs and the record, and having heard the argument of counsel; And good cause appearing;

It is ORDERED that the within appeal is temporarily remanded to Judge Patrick T. McGann of the Superior Court, Law Division, Monmouth County, for the purpose of conducting a consolidated hearing, the limitations on consolidation contained in Rule 7:4-2(f) being hereby relaxed by operation of Rule 1:1-2, at which hearing the four defendants and the State shall present evidence to develop a factual record on the allegation that partition-ratio variability compromises the scientific reliability of breathalyzer-test results, and which hearing shall address the following issues: (i) the nature and extent of the variability of the partition ratio, and (ii) the effect, if any, of such variability of the partition ratio on the reliability of breathalyzer-test results; and it is further

ORDERED that Judge McGann shall render only recommended findings of fact, which shall be forwarded together with the record to the Clerk of this Court; and it is further

ORDERED that the hearing shall be conducted as soon as is practicable but in no event later than thirty days from the filing date of this Order; and the record and recommended findings of fact shall be filed with the Clerk of this Court within fourteen days of the conclusion of the hearing; and it is further

ORDERED that until further order of this Court, prosecutions of pending and future cases brought under N.J.S.A. 39:4-50 are to proceed as therefore, without consideration of the effect of partition-ratio variability on our reliability

of breathalyzer-test results, and without any delay occasioned by the pendency of this appeal; provided, however, that defendants shall have the right to preserve any defense related to the effect of partition-ratio variability on the reliability of breathalyzer-test results by making a proffer on the record of the evidence that the defendant would submit to establish such defense.

Jurisdiction is otherwise retained.

WITNESS, the Honorable Robert N. Wilentz, Chief Justice, at Trenton, this 23rd day of March, 1989.

/S/

SUPREME COURT OF NEW  
JERSEY  
M-642 September Term 1988  
29, 818

STATE OF NEW JERSEY,  
Plaintiff-Respondent,

vs.

ORDER

ANDREW DOWNIE, et al.,  
Defendants-Movants.

This matter having been duly presented to the Court, it is ORDERED that the motion for leave to appeal is granted; and it is further

ORDERED that the appeal is to be heard on an accelerated schedule with oral argument on the appeal to take place on February 27 or 28, 1989, and as more definitely set by a future scheduling notice; and it is further

ORDERED that pending and future prosecutions of cases brought under N.J.S.A. 39: 4-50 are to proceed in due course without any delay occasioned by the pendency of this appeal.

WITNESS, the Honorable Alan B. Handler, Presiding Justice, at Trenton, on this 24th day of January, 1989.

/S/

JOHN KAYE  
MONMOUTH COUNTY PROSECUTOR  
COURT HOUSE  
FREEHOLD, NEW JERSEY 07728-1261  
(201) 431-7160  
SUPERIOR COURT OF NEW JERSEY  
LAW DIVISION (CRIMINAL)  
MONMOUTH COUNTY  
MISCELLANEOUS NO.

FILE NO.

STATE OF NEW JERSEY,

Plaintiff-Appellant

v.

ANDREW DOWNIE,  
DANIEL, MATTHEWS,  
MARTIN MAROTTA,  
AND CHARLES CARROLL,

Defendants-Respondents

ORDER GRANTING  
STANDING FOR MON-  
MOUTH COUNTY  
PROSECUTOR TO AP-  
PEAR, GRANTING  
LEAVE TO APPEAL  
NUNC PRO TUNC,  
DECONSOLIDATING  
CASES, AND DENYING  
PRECLUSION OF  
HEARING ON ISSUE OF  
ADMISSIBILITY OF  
BREATHALYZER  
EVIDENCE.

This matter having been brought before the Court on June 24, 1988, by John Kaye, Monmouth County Prosecutor, Attorney for the Plaintiff-Appellant, State of New Jersey, by Mark P. Stalford, Assistant Monmouth County Prosecutor; and appearances having been made by James N. Butler, Municipal Prosecutor of the City of Asbury Park, and Francis X. Moore, Attorney for the Defendant-Respondents, on the Monmouth County Prosecutor's motion for leave to appeal nunc pro tunc, to deconsolidate cases, and for preclusion of a hearing on the admissibility of evidence in Municipal Court, and the Court having

reviewed the papers submitted, heard arguments of counsel and for good cause shown;

It is on the 1st day of July, 1988, ORDERED that the Monmouth County Prosecutor does have proper standing to bring the within matter before this Court, that Leave to Appeal Nunc Pro Tunc is granted, that the within four cases heretofore consolidated by Order of the Honorable Donald J. Pappa, J.M.C., dated May 20, 1988, are hereby deconsolidated; and

It is FURTHERED ORDERED that the Monmouth County Prosecutor's appeal to preclude the Municipal Court from holding a pretrial hearing on the issue of the admissibility of breathalyzer evidence is hereby denied.

/S/

FRANCIS X. MOORE, P.A.  
211 MAPLE AVENUE  
P.O. BOX 830  
RED BANK, NEW JERSEY 07701  
(201) 747-6666  
ATTORNEY FOR DEFENDANT (S)  
STATE OF NEW JERSEY

Plaintiff CITY OF ASBURY  
v. PARK MUNICIPAL  
ANDREW R. DOWNIE COURT  
Defendant (s) MONMOUTH COUNTY  
ORDER

THIS MATTER BEING OPENED to the Court by the  
Office of Francis X. Moore, Esq. attorney for the above-  
named defendant;

AND IT APPEARING from the papers filed herein that the defendant is entitled to a Pretrial Hearing as to the issues recited by the moving papers;

IT IS on this 20 day of May 1988 at 9:00 am; ORDERED  
that the preliminary Pretrial Hearing be scheduled as fol-  
lows:

1. June 25, 1988, 9:00 a.m.  
2. \_\_\_\_\_  
3. \_\_\_\_\_

IT IS FURTHER ORDERED that the Municipal Prosecutor has the burden of proof and the burden of producing evidence beyond a reasonable doubt as to those issues.

DATED: May 20, 1988

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FRANCIS X. MOORE, P.A.  
211 MAPLE AVENUE  
P.O.BOX 830  
RED BANK, NEW JERSEY 07701  
ATTORNEY FOR DEFENDANT (S)

STATE OF NEW JERSEY Plaintiff v. ANDREW R. DOWNE MARTIN J. MAROTTA DANIEL MATTHEWS CHARLES F. CARROLL Defendant (s) CITY OF ASBURY PARK MUNICIPAL COURT MONMOUTH COUNTY MUNICIPAL COURT ACTION ORDER

THIS MATTER coming on to be heard before the Court at the Motion of Francis X. Moore, Attorney for the named Defendants.

And it appearing that good cause has been shown

It is on this 20th day of May, 1988, ORDERED

(1) that a Pretrial Conference will be held in this Court on the 25th day of June, 1988.

It is **FURTHER ORDERED** that

(2) each Attorney will file a Pretrial Memorandum in accordance with Rule 4:25-1 by no later than the 17th day of June, 1988.

**It is FURTHER ORDERED** that

(3) the Pretrial Memorandum shall contain at least the following contents:

TABLE OF CONTENTS

1. Nature of action
2. Admissions or stipulations
- 3a. Factual contentions moving party
- 3b. Legal contentions moving party
- 4a. Factual contentions opposing party
- 4b. Legal contentions opposing party
5. All Claims as to Disposition
6. All Amendments to existing Pleadings
7. Specification of issues to be determined at time of Hearing, evidence
8. Specification of issues to be determined at time of Hearing, legal
9. A list of exhibits to be marked in evidence by consent
10. A list and anticipated Order of Production of Witnesses, lay and expert
11. Direction as to the filing of briefs
12. The suggested order of opening and closing, burden of proof and burden of going forward
13. Any other matters which have been agreed upon in order to expedite the disposition of the case
14. The name and addresses of attorneys who will try the matter
15. The estimated length of the Hearing
16. The dates to be set by the Court for Hearings

DATED: May 20, 1988

/S/

FRANCIS X. MOORE, P.A.  
211 MAPLE AVENUE  
P.O.BOX 830  
RED BANK, NEW JERSEY 07701  
(201) 747-6666  
ATTORNEY FOR DEFENDANT (S)

Plaintiff	ASBURY PARK
THE STATE OF NEW	MUNICIPAL
JERSEY	COURT
vs.	MONMOUTH
Defendant (s)	COUNTY
ANDREW DOWNIE	ORDER OF CON-
DANIEL MATTHEWS	SOLIDATION
South Belmar Municipal Court	
MARTIN MAROTTA - Deal Municipal Court	
CHARLES CARROLL - Allenhurst Municipal Court	

The above-entitled actions having come on for pretrial hearing as per R. 7:4-2(d) and R. 3:13-1, and it appearing to the court that all of them involve claims and defenses based in each case upon the

1. accuracy and reliability of breath testing machines, methodology, science and fact, and

2. incompetency and inadmissibility of breath testing procedure and systems, and

IT FURTHER APPEARING that the evidence offered in each of the cases involve a common question of law and fact, and

IT FURTHER APPEARING that the consolidation will tend to avoid unnecessary costs and delays,

IT IS, on this 20th day of May, 1988, ORDERED that the above-entitled actions be consolidated.

IT IS FURTHER ORDERED that the remaining issues raised by the defense which are not common questions of law or fact in the actions hereby consolidated for this limited purpose be and the same hereby are, reserved for separate trial after the final judgement of this court is rendered upon the issues included in the consolidation hereby made.

/S/

SUPREME COURT OF NEW JERSEY  
A-167 SEPTEMBER TERM 1988

STATE OF NEW JERSEY

Plaintiff-Respondent

v.

ANDREW DOWNIE  
Defendant-Appellant

ON TEMPORARY  
REMAND TO THE SUPE-  
RIOR COURT, LAW  
DIVISION, MONMOUTH  
COUNTY

STATE OF NEW JERSEY

Plaintiff-Respondent

v.

FINDINGS OF FACT

DANIEL MATTHEWS  
Defendant-Appellant

STATE OF NEW JERSEY

Plaintiff-Respondent

v.

MARTIN J. MAROTTA  
Defendant-Appellant

STATE OF NEW JERSEY

Plaintiff-Respondent

v.

CHARLES F. CARROLL  
Defendant-Appellant

Boris Moczula and John M. Fahy, Deputy Attorney General for the State, Peter N. Perretti, Jr., Attorney General.

Mark P Stalford, Assistant County Prosecutor for John A. Kaye, Monmouth County Prosecutor

Francis X. Moore for defendants, Downie, Matthews, Marotta and Carroll

E. John Wherry, Jr.; amicus curiae on behalf of the National Association of Criminal Defense Lawyers

PATRICK T. McGANN, JR., J.S.C.

#### INTRODUCTION

This matter was remanded to the Law Division for the purpose of conducting a hearing in the matters which have been consolidated; for which certification has been granted and on which argument on appeal is pending. In accordance with the remand, at the hearing "the four defendants and the State shall present evidence to develop a factual record on the allegation that partition-ratio variability compromises the scientific reliability of breathalyzer-test results, and which hearing shall address the following issues: (i) the nature and extent of the variability of the partition ratio, and (ii) the effect, if any, of such variability of the partition ratio on the reliability of breathalyzer-test results."

Pursuant to the remand and with the cooperation of all counsel, expedited hearings were held on April 27, May 1, May 15, May 17, May 19, May 22, May 24, May

30, May 31, June 1, 1989. Ten witnesses were called. The particular expertise of each was not subject to challenge. Complete transcripts of their testimony have been produced and made available to all counsel. Originals of those transcripts are submitted to the Court along with these findings. Various exhibits were received in evidence. A set of those exhibits likewise accompanies these findings.

For ease in review I have extracted what I deem to be the essential facts and opinions expressed by each of the witnesses, and have commented, where deemed appropriate, on the weight and value which I placed on those opinions. In what appears to be a fairly logical order, those synopsized findings along with the curriculum vitae of each witness have been appended hereto under tabs A through J. The order chosen is Dr. Borkenstein, Dr. Hlastala, Dr. Payne, Dr. Jones, Dr. Dubowski, Mr. Shajani, Mr. Lucas, Sgt. Gullberg, Mr. Harding and Dr. Simpson.

Dr. Borkenstein is the inventor of the Breathalyzer and gives an historic view of the matters to be considered on the remand. Dr. Hlastala gives informative information on the physiology of human lungs and on the readings of alcohol in the breath. Drs. Jones and Dubowski have been leaders in experimental blood-breath studies and on the so-called partition ratio. Dr. Payne did some significant early work in the field. Mr. Shajani, Mr. Lucas and Sgt. Gullberg have a perspective on both laboratory studies and field work with Breathalyzers. Mr. Harding and Dr. Simpson did no experimental or field work but simply drew statistical conclusions based on the published works of others.

The references in the findings to the work or views of one or another of these experts is then, to the detailed findings which I made on each and not to page and line in their testimony, for that is quite difficult to do. In order to extract a particular statement or conclusion one must digest many pages of testimony and of legal colloquy. In some cases a statement originally made in a fragmentary fashion becomes clear only much later on in the questioning.

### THE PROBLEM

Scientists have known for a long time that it is the presence of alcohol<sup>1</sup> in the brain that causes disfunction there, leading to automobile accidents resulting from that cerebral disfunction. The medium by which alcohol gets to the brain is the blood. If it were possible to directly sample blood from the brain, the amount of alcohol it contains can be easily and very accurately read. But it is not.

Alcohol comes into the human body by being imbibed and deposited in the stomach and passes to the small intestines. It is absorbed into the blood partly in the stomach and principally from the small intestines. Absorption can take place quite quickly or more slowly depending on the contents of the stomach and the strength and quantity of the alcohol ingested at a particular time. The alcohol laden blood then passes to the liver and circulates through all parts of the body where it is found in all water in the body. Freshly formed urine, saliva or other body fluids receive the alcohol in proportions to their water content. Readings of amount of alcohol are those fluids can be and have been made. Blood from

<sup>1</sup>"Alcohol" through out means ethyl (grain) alcohol (ethanol).

many parts of the body, taken after a certain time for absorption, will reflect the alcohol present in the body.

When it comes to other than laboratory testing, urine specimens and saliva samples are not particularly accurate and are difficult to obtain, especially on a repeat basis over a short period of time. They are unsatisfactory for field work.

The taking of blood samples does pose some inconveniences to the person charged but not of great magnitude. With blood the first question must be - from what part of the body was the sample taken? The amount of alcohol present in the blood will vary between, for example, venous blood from the ubital (elbow) vein in the arm or from the fingertips "capillary" blood or from the arteries "arterial" blood. Even arterial blood will give different readings on the amount of alcohol present depending on the situs of the blood sample.

Arterial blood passes through the lungs into the heart and from there is sent to the brain through the carotid arteries. On leaving the brain it travels through the venous system in the body back through the liver and continues through the heart where it is again pumped into the arterial system and lungs.

Returning to the problem of determining how much alcohol there is in the brain, the immediate source of blood supply to the brain is through the carotid arteries. If one could simply and safely draw a blood sample from one of those arteries and measure the alcohol content in it, it would be an excellent measure of alcohol in the brain. Such a procedure is neither simple nor safe.

Blood can be taken from other sites - commonly the finger tips or the cubital vein. Both sites are much more remote from the brain and do not give a precise indication of what is going on in the brain at the time they are taken. The alcohol content of the blood is constantly changing as it circulates through the body. It is being eliminated through the various parts of the circulatory system and is picking up more alcohol from the small intestines so long as some remains in the stomach.

For multiple tests upon which accuracy of blood readings depends, the fingertip blood or capillary blood is not satisfactory. The size of the sample is small and there is the immediate danger of exposure to the air and evaporation of some of the alcohol it contains, since alcohol is a very volatile substance. Venous blood is very satisfactory as to its quantity, however as will be noted later herein, it does not give an accurate reflection of the alcohol in the brain - especially during the time alcohol is still being absorbed through the stomach and small intestines into the blood. All of the foregoing has been known to scientists for a long time.

Scientists also have long known that as the blood passes along the alveolar (homey-comb-like) cells in the lungs, some of the volatile alcohol in the blood will escape into the breath chambers on the other side of the thin membrane which makes up those cells. This transfer of alcohol from blood to breath in the lungs proceeds, in general, at a fairly predictable rate for most people, but as with everything else about humans, in probably no two is that rate exactly the same.

Since arterial blood passing through the lungs is the next most reachable spot for testing prior to going through the carotid arteries to the brain, it was obvious that if some accurate form of detecting the amount of alcohol in the breath could be developed and that breath-alcohol related to an assumed amount of alcohol in the arterial blood which produced it, a prediction could be made as to how much alcohol must be present in the blood flowing through the brain. Hence the Breathalyzer and all other breath-alcohol analyzing instruments.

There is no problem at all with the technology for measuring the amount of alcohol present in a given sample of breath or vapor. The Breathalyzer is but one of a number of scientifically proven instruments. Given proper working order and a trained operator it can read alcohol in breath magnificently well and with complete scientific acceptability. All experts agree.

The sticking point is relating that breath-alcohol reading or concentration (BrAC) into a blood alcohol concentration (BAC). That depends on what goes on in the individual's lungs.

It is well to pause here to review New Jersey law on breath testing for it relates to the problem posed by known differences in the rate at which alcohol partly vaporizes from the blood into the breath in the lungs.

The following are provisions of New Jersey statutory law regarding prosecutions for "drunk driving" or "DWI" pertinent to the fact-finding function of this court.

N.J.S.A. 39:4-50(a). "A person who....operates a motor vehicle with a blood alcohol concentration of 0.10% or more by weight of alcohol in the defendant's blood ...." is guilty, and subject to various penalties.

N.J.S.A. 39:4-50.2(a). "Any person who operates a motor vehicle on any public road....shall be deemed to have given his consent to the taking of samples of his breath for the purpose of making chemical tests to determine the content of alcohol in his blood; provided, however, that the provisions of this act....

(b) A record of the taking of any such sample, disclosing the date and time thereof, as well as the result of any chemical test, shall be made and a copy thereof upon his request, shall be furnished or made available to the person so tested.

(c) In addition to the samples taken and tests made at the direction of a police officer hereunder, the person tested shall be permitted to have such samples taken and chemical tests of his breath, urine or blood made by a person or physician of his own selection."...

N.J.S.A. 39:4-50.3 provides:

Chemical analyses of the arrested person's breath, to be considered valid under the provisions of this act, shall have been performed according to methods approved by the Attorney General, and by a person

certified for this purpose by the Attorney General. The Attorney General is authorized to approve satisfactory techniques or methods, to ascertain the qualifications and competence of individuals to conduct such analyses, and to make certifications of such individuals, which certifications shall be subject to termination or revocation at the discretion of the Attorney General. The Attorney General shall prescribe a uniform form for reports of such chemical analysis of breath to be used by law enforcement officers and others acting in accordance with the provisions of this act.

Appropriate regulations regarding chemical breath testing have been adopted by the Attorney General and published in the New Jersey Administrative Code. N.J.A.C. 13:15-1.1 et. seq. They include specifications for training and qualification of Breath Test Operators, Coordinator/Instructors and a list of proved test instruments and requirements for periodic inspection of the same. Among them are the Breathalyzer Models 900 and 900A.

As Dr. Borkenstein noted, those such as Harger and he and others were trying to determine at what assumed ratio (of partition i.e. transfer, of alcohol from blood to breath in the lungs) should their machine be set or calibrated so that when an individual blew alveolar breath into the test chamber the pointing of the needle on the scale would give accurate results. It is significant in this historical development that in the early 1950's when the Breathalyzer was being designed it was not intended as a "per se" instrument - as a judgement device that would give definitive proof of being "under the influence". Rather was it meant to be the "back-up" evidence to the traditional

testimony of manner of observed driving; physical observations on the scene - redded eyes, slurred speech, staggering and the like; response to physical tests at headquarters - finger-to-nose, walking the line, standing erect with eyes closed and the like. It was intended also to supplement answers to questions on the uniform police which form was very carefully developed. If there were lingering doubts whether the person ws "driving under the influence", the machine reading would provide the backup.

But the first question was, "At what assumed ratio of blood to breath partition of alcohol shall we calibrate the machine?" There is no direct method for measuring an individual's lung partition ratio The only way it can be arrived at is by scientific experimentation and calculation. Based on experiments which gave them an educated hunch, scientists generally believed in the 1950's that a probable average ratio for all adults would be about 2000 to 1; that is for every 2000 parts of alcohol in the blood, one part would be released into the alveolar breath in the lungs. Not all agreed, however, and so the National Safety Council, anxious to press forward with breath testing for drunk drivers gathered the leading experimenters together and they agreed, in 1952, a convention which read:

The basic principle governing the operation of the three presently used breath alcohol methods (the Drunkometer, the Intoximeter and Alcometer) is the constant ratio existing between the concentration of alcohol in the alveolar air and the blood. Available information indicates that this alveolar air-blood ratio is approximately 1:2100. However, since each

method involves different procedures, different empirical factors are involved in the calculation of concentrations of alcohol in the blood in each of the methods.

It is the opinion of the subcommittee that the tests made on the Alcometer, the Intoximeter and the Drunkometer, if conducted in the manner prescribed by the authors of the respective methods, will give comparable and reliable results for estimating the concentration of alcohol in the blood.

And the 2100 to 1 ratio came into existence. It has been the ratio with which all breath reading instruments have been calibrated from then to the present - all over the world. In 1972 an Ad Hoc Committee on the Blood-Breath Alcohol Relationship comprised of leading men in the field from this country (including Borkenstein and Dubowski) and from Europe met and agreed on the following statement:

The basic principle governing the design of breath alcohol instruments is that a physiological relationship exists between the concentration of alcohol in expired alveolar air and in the blood.

Available information indicates that 2.1 liters of expired alveolar air contain approximately the same quantity of alcohol as a milliliter of blood.

Continued use of this ratio in clinical and legal applications is warranted.

What does calibration mean? The instrument must have a known standard to which it can compare an unknown sample. The instrument does not say "this is alcohol in human breath." It simply reads the alcohol content of a vapor - any vapor - which is introduced into it in a specific volume.

Henry's Law in physical chemistry provides that when a liquid containing a concentration of alcohol (or any volatile substance) is in contact with air space in a closed container and at a known temperature, a certain amount of the alcohol will escape into the air space above and become part of the vapor. The amount of the alcohol that does transfer will depend on the strength of the alcohol concentration in the liquid at the given temperature. The higher the temperature the more alcohol will escape to the vapor (and less for a lower temperature). For a fixed temperature and a fixed concentration of alcohol in the liquid a state of equilibrium will be rapidly reached at which the amounts of alcohol in air and liquid are static. The amount of alcohol in the vapor is then measured by, for example, gas chromatography, as is the amount of alcohol in the liquid. Those are precise readings. If the alcohol in the liquid is divided by the alcohol in the vapor, a ratio is set up. e.g. 2200 parts in liquid to 1 part in vapor. That is the true partition ratio for that concentration of alcohol at that temperature.

Sgt. Gullberg described quite clearly how a Simulator solution is chemically prepared to calibrate the Breathalyzer. At 34° C a solution of .121 gr. of alcohol per 100 milliliters of water will give off alcohol to the vapor (read by the instrument) of .10 gr. per 210 liters of vapor. When the needle deflects the scale under it is adjusted

to read .10 grams per 210 liters. Thereafter it will read .10 gr. per 210 liter when another vapor sample exactly the same is presented to it. This is precisely what the test ampule does in the operational procedure for the Breathalyzer. If the vapor sample has less alcohol it will read lower; if more alcohol, higher.

The machine can be calibrated in the way to assume that the vapor it reads has been produced from a 2300 to 1 partition sample (liquid to air) by subtracting a precise amount of alcohol from the known solution and adjusting the scale upward to read .10 or to 1900 to 1 by adding alcohol and adjusting the scale downward to read .10.

Henry's Law as related to the lungs juxtaposes blood in the lungs for the liquid and alveolar breath in the lungs for vapor. Some amount of alcohol is given off from the blood to the breath. But the lungs are not the closed laboratory container with a solution of liquid and an air space above. They are much more complex. And that is why the actual partition ratio in the lungs cannot be measured; it can only be estimated by calculation.

Armed then with a Breathalyzer calibrated to assume that the breath sample is received would be from a source with a partition ration of 2100 to 1, competent scientists have been conducting experiments to see just how good the Breathalyzer results are when compared to blood samples taken from subjects at the same time breath samples are taken. In the early days Payne conducted such experiments. Jones and Dubowski have done an immense amount of similar work. To a lesser degree but in a very professional manner so have Shajani, Lucas and Gullberg. Their synopses should be read for an ap-

preciation of their techniques and various scenarios posted in laboratory studies.

In general a breath sample read by the Breathalyzer is taken at a particular time interval and a blood sample is taken at about the same time. The blood sample is read chemically or by gas chromatography to three decimal places, e.g., 117 gr. of alcohol per 1000 milliliter of blood. The Breathalyzer reads out directly in gr. of alcohol per 210 liters of breath. In doing so it can read to three decimal places as well. It can also be modified (as in New Jersey) to convert that breath reading to a presumed blood alcohol reading. All that takes is slipping under the needle reading a breath scale (factory model), a cardboard scale reading directly in assumed blood alcohol. (D44 Ev) This is simply a mechanical 1 to 2100 conversion of the breath reading into a blood reading (assumed). Where, for example, the needle pointed to .117 gr. per 210 liters of breath it will still be pointed there but the new scale will show a point between .10 and .12% of alcohol by weight in blood. It will be closer to .12 and can be visually estimated at .117 but in actual use the third decimal is "truncated" or dropped and the reading would be reported at .11.

The blood to breath ratio calculates out in this fashion:

BAC = Blood Alcohol Concentration

BrAC = Breath Alcohol Concentration

With an instrument calibrated at 2100 to 1 it would be as follows for a .10% reading.

BAC in gr. (alcohol) =  $\frac{.10\text{gr}}{100\text{ mil (blood)}}$  =  $\frac{.10\text{gr}}{100\text{ml}}$  = .10% weight of alcohol alcohol in blood

BrAC in gr. (alcohol) =  $\frac{.10\text{gr.}}{210\text{ liters (breath)}}$  or  $\frac{.10\text{g.}}{210,000\text{ml.}}$

$$\frac{.10/100}{.10/210,000} \frac{100}{100} = .10 \frac{x 210,000}{.10} = \frac{2100}{1}$$

Thus, the ratio is  $\frac{\text{gr. (blood)}}{\text{gr. (breath)}}$   $\times 210$

If the blood reading is .02 and the breath is .04, the ratio would be 1050.

The blood reading determined is not a perfect determination. As with all analytical processes, even with more carefully controlled procedures, there will be variations. See Borkenstein's and Jones' synopses for example. Therefore, when comparing breath alcohol to blood alcohol readings it cannot be assumed, if they do not correlate, that the blood reading is absolutely correct. One other very important fact to be kept in mind is that the blood sample is either venous (in most cases) or capillary (the early days in Sweden) blood - neither of which directly and precisely reflects the amount of alcohol in the arterial blood going to the brain.

These "paired" samples of breath and blood are taken from the subject over a period of time (up to 7 or 8 hours) at stated intervals (15 or 20 minutes).

The results then can be plotted in curves of blood alcohol readings and breath alcohol readings which will visually demonstrate the mathematical differences between the two. For each "pair" a ratio can be calculated for

that moment in time, for that individual, and a plotting of ratios can be achieved. The results of all of those pairs for all of the individuals can be plotted on a scattergram which will give a visual presentation of the various scattergram a "best fit" line can be constructed to determine what is the average ratio for all of those points.

In this fashion, over the years, all of the investigators agree that the average ratio for all individuals tested and which probably applies to the universe of adults is 2300 to 1 (rather than 2100 to 1 which was the starting point back in 1951).

The upshot is that the Breathalyzer does not read a breath alcohol converted to blood alcohol as accurately as it could. It would do so more accurately if it were calibrated to 2300 to 1 which seems to be an average partition ratio in the lungs of adults - as calculated from the many paired blood and breath samples taken over the years. But that does not answer the inquiry here.

The 2100 to 1 ratio causes an underreading of the measured blood alcohol concentration in about 85% of all of the paired samples. Dobowski<sup>3</sup> fixes the figure at 86%. Of the remaining 14% of the pairs he found that in 2.6% of them the converted BrAC and measured BAC turned out to be the same. In 11.4% of the pairs the Breathalyzer converted reading was higher than the measured BAC in the venous whole blood sample taken. It is this 11.4% that requires further investigation because it is only there that there lies a possibility that a subject

<sup>3</sup> I use his percentages as a framework for developing the conclusions which follow because I find that his work produces the most refined and accurate percentages in that regard.

will receive a higher reading (.10% or over) when his true brain alcohol level is lower than .10%. In all of the other cases the converted BAC will be either lower than or equal to the true BAC. There can be no unfair conviction in either of those cases.

Within that 11.4% of overreadings, there is no conceptual concern where the true BAC is at least .10% and the converted BAC is even higher. For example, if true BAC were .11 and converted BAC is .12, there is no unfair conviction. On the reverse end there is no concern at all where the converted BAC is lower than .10 even if the true BAC is lower still. There can be no finding (absent traditional evidence) of guilt/where the Breathalyzer reads less than .10. Dobowski recognizes that forensic reality and is going through the hundreds of pairs that he used he found that at the "critical level" of .10 there is a possible overestimation of only 2.3%.

It must be understood that the 2.3% applies to the possibility of separate pairs from the same individual resulting in an overestimation. It does not apply to people.

In his experiments, as well as those of Jones, Shajani, Lucas and Gullberg, one subject produces many pairs. Most of them are underestimates. It does not mean that if that subject or some one accused of drunk driving were given a test that there is a probability that at that particular point in time there would be an over-estimate. He, as do Jones, Shajani, Lucas and Gullberg, finds no overestimation in the post-peak phase of alcohol absorption and elimination. Whether a person takes a single large drink of alcohol or a large amount spread over a long period of social drinking; whether he drinks on

a full or empty stomach, there comes a point, after the last intake of alcohol, where his BAC rises to a high point and gradually decreases as the process of bodily elimination of alcohol takes place. After that peak there are no overestimation. The one that take place occur in the pre-peak or absorptive state. The alcohol rise is much quicker in time than its decrease. And it is not surprising in that rapidly rising BAC period to find the Breathalyzer reading higher than a simultaneous venous blood sample - because, again, it is reading alcohol in the breath, the closest indication of what alcohol in the arterial blood is doing to the brain. It is known that venous blood has not yet caught up with the higher arterial blood reading during the period of relatively sharp increase. In other words, rather than considering the 2.3% overestimation to be an error, it is probably correct and it is this venous blood sample which is in error as a predictor of what is occurring at that moment in the brain.

In all of his tests Dubowski has found a range of these calculated ratios based on paired samples from a low of 1706 to 1 (one pair) to a high of 30653 to 1.<sup>4</sup> No two individuals have the same lung partition ration and for one individual the ratio varies with time as his BAC rises and falls with absorption and elimination. That is not surprising for Henry's Law states that a partition ratio will vary according to the concentration of the volatile substance in the liquid.

The variation of the ratio stems from this continuing change in the blood alcohol concentration from one mo-

<sup>4</sup>His range of variability is the most acceptable of all because of the precision of his test procedures.

ment to another and it can vary, as Dr. Hlastala explained, by differences in lung structure and lung health, as well as core body temperature - Henry's Law, again - which is usually 37°C (98.6F) but which can be elevated or depressed at the moment of the test, as well as breathing patterns and even hematocrit levels in the blood of an individual. With all of these variables - especially that of a time for absorption, it is impossible to say that any person has a specific blood-breath ratio in his lungs. Again 2300 to 1 seems to be the best average figure for all people and all BACs. 2100 to 1 is used and gives lower than true readings in all cases<sup>5</sup> except a few in the absorptive period and as to that time, the breath alcohol reading is more reliable than the venous blood reading.

For the breath reading instruments the principal problem is getting a sample of the alveolar breath in the lungs. It is there that one will find the maximum concentration of alcohol transferred from the blood. That reading, deep down inside the lungs, cannot be taken. The best that can be obtained is what the subject blows out. At the beginning of the "blow" the breath will be from upper respiratory passages where only slight amounts of alcohol might be present. That is why, in order to get a realistic and meaningful breath sample the subject is instructed to blow steadily; the first breath received is simply passed through the measuring chamber and the operator traps only what he deems to be "end-expiratory" breath (the closest one can come to true alveolar breath) for the

<sup>5</sup>It is quite clear that from the standpoint of removing drunk drivers from the highway, the vast majority of those tested "get a break" from the reading. It is this fact that has led many states and countries to legislate an alternative breath standard to the present blood standard, e.g., .10 gr. per 210 liters of breath.

reading. To the extent that "end expiratory" breath is not obtained, the reading will be lower than it should be. That factor, too, can drastically affect the "paired" ratio developed.

The so-called variation in blood-breath ratios is a useless chase, except as noted, to get a sense of where the average figure lies. As he, Dubowski, terms it, a blood-breath "ratio" is a "moving target"; it is only a mathematical calculation and it proves nothing with regard to the reliability of the test.

The best proof of reliability of the reading is the second test. The two tests 15 minutes apart eliminate the possibility of mouth alcohol falsely elevating a reading; if they are within  $\pm 10\%$  of one another (.01 at the .10% level) one can have confidence in the results and if the lower of the two is used for proof, the subject receives an additional benefit (50% lower than if the readings were averaged). If the two tests differ by more than .01 (at a .10% level) a third test should be given to be sure that a variation of .01 or less is obtained - and then the lower of the two readings should be used.

## CONCLUSIONS OF FACT

1. The Breathalyzer, Models 900 and 900A, is a scientifically reliable and accurate device for measurement of the alcohol content of the breath of an individual (assuming proper functioning of the instrument and a qualified operator).
2. In converting at a ratio of 1 to 2100 the breath alcohol concentration present in the individual's blood, the Breathalyzer reading is not scientifically accurate.
3. Calculated blood/breath ratios are worthless for forensic purposes. They are subject to so many variables as to be unuseable except for gross estimates of an individual's true lung partition ratio - and then only at a particular moment in time. (Borkenstein, Dubowski, Payne, Jones, Lucas).
4. In a prosecution for drunk driving the Breathalyzer calibrated at 2100 to 1 vapor/alcohol ratio, is biased in favor of the accused.
  - A. It under-reads the average individual by some 9% or 10% compared to a venous whole blood sample that might be simultaneously taken.
  - B. Its "truncated" reading gives the individual the benefit of anywhere from .001 to .009 on a given test reading.
  - C. Using the "start line" set on the Breathalyzer scale gives the individual the benefit of another - .003 on any test reading. (all experts agree with the foregoing)

- D. The lower value of two consecutive readings taken 15 minutes apart is used for proof.
- 5. Breathalyzer gives a correct reading of alcohol in the breath at a particular moment in time. It does not distinguish between pre-peak "absorptive" or post-peak "post absorptive" stages in the intake and elimination of alcohol in the blood. Those terms are of value only to the scientist.
- 6. The Breathalyzer does not overestimate alcohol in the blood at the .10% level to the detriment of the accused. That is clearly so in the post-peak state. In the pre-peak state the Breathalyzer reading is more accurate in predicting the amount of alcohol affecting the brain than a venous blood sample and it cannot be empirically demonstrative that it is in error, so long as two breath readings are taken within 15 minutes of each other; do not differ by more than .01% and the lower of the two is used for proof purposes - (Jones, Shajani, Dubowski, Lucas).
- 7. To give readings that can be used with confidence, the operator must be sure that at least 20 minutes has expired since the last ingestion of alcohol to avoid the presence of "mouth" alcohol which can give a falsely high reading.

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## ROBERT F. BORKENSTEIN

Robert F. Borkenstein invented the Breathalyzer in 1954. As his extensive curriculum vitae shows, he has been a leader in research in breath measurements as related to blood alcohol concentrations since at least that date. Prior thereto he used and researched data on the Drunkometer since 1936. His expertise enjoys world-wide recognition. It is not questioned by any of the attorneys involved in this fact finding process and is readily and fully accepted by this court. He remains completely active in the field until the present.

Over the years he has done many correlation studies of concentrations of alcohol in breath and blood samples taken nearly simultaneously from subjects and is competent to give valued opinions based on the mass of accumulated data. The royalties which he has received over the years for his invention and the use of the trademark have been, for the most part, plowed back into his continual research and travels in attending various conferences world wide.

Measurements of alcohol in the blood (as an indication of impairment of the brain) were developed in the early 1920's. Researchers know that while alcohol is present in proportions to the amount of water in any bodily tissue (saliva or urine, for example, can be used) blood is superior for research purposes because it is easy to obtain and its correlation to what is occurring in the brain at a particular moment in time is more precise. There was also a scientific consensus - early on - that a measured amount of alcohol in 2 liters of breath from the lungs was roughly the same

Arterial blood is the best measure of alcohol in the brain; venous blood is good, but is not as accurate. Capillary blood (e.g., from the fingertips) falls in between and is closer in accuracy to arterial blood. Capillary blood is a shunt between the venal and arterial blood systems. It produces, however, a small sample and is subject to evaporation of alcohol to the surrounding air.

Because breath samples are so much easier to obtain and analyze in a field situation, all of the United States now use breath machines for law enforcement purposes. Some give direct readings of the amount of alcohol in the breath (where the legislature defines the offense in those terms); others, as in New Jersey convert the alcohol-in-breath reading to an alcohol-in-blood reading in order to meet the legislative definition. Borkenstein is fully familiar with the design and working principles of all of those breath machines. All of them (including the Breathalyzer) use a ratio of 2100 to 1 to convert the alcohol found in breath to a presumed amount of alcohol in the blood - where such a conversion is necessary to meet the statutory definition. The concept of this ratio has been explored and discussed in the literature for at least 50 years. It is nothing new.

2100 to 1 is not a precise conversion factor. Borkenstein's studies lead to the conclusion that for a large population the more accurate ratio would be 2290 to 1; that is the weight of alcohol in 2.29 liters of breath would be the same as in 1 ml of an individual's blood sampled at the same time. That fact leads to the conclusion that the Breathalyzer reading (in converted terms of alcohol in blood) understates the actual alcohol in the blood by about 9%. He found, as have all other investigators, that

in blood) understates the actual alcohol in the blood by about 9%. He found, as have all other investigators, that the Breathalyzer reads alcohol in breath vapor in very accurate, scientifically acceptable fashion (a standard deviation of .003).

2100 to 1 was retained because it could not harm an accused individual (Indeed it would produce a result probably biased in his favor on the low side.) Based on scattergrams created by plottings of simultaneous breath and blood samples, Borkenstein concludes that the breath results might be higher than actual blood readings only in a very rare instance. As he points out the analysis of the weight of alcohol in the blood does not produce an absolute figure. There is a variation to be expected even in the most precise analysis of, for example, three samples taken from one vial of blood drawn. There are variations in the weight of alcohol found depending where the blood is drawn from, e.g., arm, finger, ear, foot, or the type of blood drawn, e.g. venous, capillary or arterial. His later studies on breath-blood correlations continued to confirm that conclusion as did the studies of others pre-eminent in the field. Those studies are "innumerable".

Borkenstein's studies lead him to conclude that the range of calculated partition ratios in individuals studied, varied from 1900 to 1 to about 3000 to 1. There were very few at either the low end or at the high end.

There is no concern (for forensic purposes) with persons having a ratio of 2100 to 1 or higher. Their breath-converted-to-blood readings would be equal to, or below, actual blood readings. For the rare individual who happened to have an actual 1900 to 1 ratio his breath reading

only .09 with a 1900 to 1 ratio. The maximum overstatement in that case would be .01%. He concedes - not based on actual comparison - but on statistical possibility using three standard deviations that out of 1000 subjects, 3 could have their blood alcohol overestimated by the breath reading. He also maintains that statistical analysis not applicable to the reported data from breath-blood paired readings, that the plottings reveal a skewed distribution rather than a bell-shaped distribution and that the use of standard deviations is meaningless.

As he pointed out there was no way of actually testing for a person's "partition ratio". It is only a value calculated from simultaneous blood and breath readings, neither of which can ever be said to be absolutely accurate. As used in the Breathalyzer the 2100 to 1 conversion ratio is only an inference.

However, he was frank to say that based on a single Breathalyzer breath reading converted to an assumed weight in alcohol reading, he is personally opposed to a .10 "per se" law. He believes that it should be presumptive rather than conclusive proof. If conclusive, it places too much stress on the test never intended by the scientists in the field. They intended it to be corroborative of the observations of the police officer or examining person. The Breathalyzer is not "a magic box" at the critical point of .10%. He has no problem at all with a finding of guilty based on a .11 reading.

## MICHAEL HLASTALA

Michael P. Hlastala (as his extensive Curriculum Vitae reveals) was a most impressive witness in the related fields of Physiology, Biophysics and Medicine. He is a Professor in those subjects at the University of Washington. His field of interest for the last 20 years has been Respiratory Physiology. He has done extensive research on functioning of human lungs; is familiar with breath testing instruments and is doing research on the effect of air pollutants on human lungs for the Federal government.

His interest in the area of breath testing for the presence of alcohol was stirred by inquiries from attorneys representing clients charged with drunk driving.

He confirms what others have found, viz. 1) there is a recognized relationship between the amount of alcohol measured in a person's breath and that which is found in his blood, 2) that relationship is not the same for every individual, nor is it constant within an individual at all times, 3) in a given individual, unusual changes in body physiology - e.g. blood temperature, lung disease, etc. can change the ratio, 4) the ratio itself is not measurable; it is the result of a calculation based on two measurements - neither of which can be made with absolute exactitude - the amount of alcohol in a sample of blood (BAC) compared to the amount of alcohol in a sample of breath (BrAC) in a given individual and based on simultaneously taken samples, 5) over many years of correlation studies made by many competent scientists a working ratio of 2100 to 1 as an average for the universe of people has been accepted as a basis for calculating how much alcohol

is present in blood - at a given moment - based on how much alcohol is measured as present in breath, 6) the Breathalyzer 900 and 900A (along with a number of other breath testing instruments) give scientifically acceptable readings of the amount of alcohol present in a person's breath.

Professor Hlastala recognizes the difference between scientific acceptability and forensic use of the results of breath testing. He questions 1) whether the breath being tested by the instrument is a correct reflection of arterial blood coursing through the lungs, or whether, for reasons he discussed, it may be reflecting a higher-than-should-be amount of alcohol in the blood. He also questions 2) whether in being calibrated with an assumed 2100 to 1 ratio, the breathalyzer might not, in some cases, be producing a higher-than-should-be reading of actual alcohol in the blood (and therefore, in close cases, an improper conviction).

Dr. Hlastala did no independent correlation studies of simultaneous breath and blood samplings. He read the publications and data of the recognized experimenters in the field and then produced an article - D29Ev - which reflects his methods and conclusions.

He suggests precision in the use of terms. "Partition ratio" should not be used in connection with breath testing to determine presence of alcohol in the blood. Partition ratio is derived from Henry's Law - a well recognized scientific principle which relates to dilute solutions of all gases dissolved in liquids. It mathematically describes the relationship of the equilibrium concentration of a dissolved gas in a liquid in a closed glass container to its con-

centration in the air above the liquid. It is expressed as a constant relationship of molecules of gas in the liquid compared to the number of molecules of the same gas given off to the air above the liquid. That partition ratio differs from various gases (of which ethyl alcohol is one) and for various liquids and for various temperatures.

By rough analogy, the liquid containing the gas concentration is the arterial blood coursing through the lungs; the air above the liquid is the breath present in the lungs; the temperature affecting the transfer of some of the gas (alcohol) from blood to breath is the body temperature. Human lungs are obviously far more complex structures than a closed glass container. Therefore, while the process of transfer of some of the alcohol in the blood to the lung breath does take place, Henry's Law cannot be used. (Henry's Law is perfectly valid, however, in preparing the alcohol simulators which are used to calibrate the Breathalyzer).

For reasons Dr. Hlastala prefers to use the term blood-breath ratio, which, as noted, is simply a correlation of simultaneous readings of alcohol found in blood to alcohol found in air - but expressed in terms of alcohol in blood. The latter figure is already imprecise because it is developed by a machine which has already assumed the measured person's breath alcohol is 1/2100 of his blood alcohol. Dr. Hlastala points out the ranges of blood-breath ratios developed in literature which he examined (1100 to 3500, in general) and concludes that an assumed ratio of 2100 to 1 can give erroneous prediction as to actual alcohol in blood and lead to unfair convictions) in a substantial number of cases. He also believes that most of the wide variations in the range of the blood/breath ratio

is probably attributable in the main to physiological factors affecting the breath sample rather than variability of individual bodily makeup (which may be as low as  $\pm$  4%).

He prefers not to look at ranges of ratios as a source of possible error, but rather at physiological factors affecting the breath alcohol reading.<sup>1</sup> I also regard the range of calculated blood/breath ratios to be a false trail to follow in arguing that a person might be one of those statistical potentials to possess a lower than 2100 to 1 ratio and therefore receive a falsely high reading (and conviction based thereon.) It is simply not demonstrably so and the data upon which such calculations are made is inherently suspect.

The physiological factors he points to are 4: 1) Breathing patterns, 2) body temperature, 3) hematocrit levels, 4) respiratory diseases.

**Breathing Patterns.** Breathalyzer procedure requires the operator to be sure that a "deep breath" sample is obtained from the accused. The theory is that only "deep breath" or "end-expiratory" breath will most closely approximate the condition of the arterial blood. Dr. Hlastala believes this to be a major source of overreading alcohol in the blood. In a continuous exhalation the final breath tends to have more alcohol because it tends to pick up alcohol previously deposited in the air passages by evaporation as the initial part of the exhalation passed through. A "true" reading of alcohol in alveolar breath would be an

<sup>1</sup> These factors, it should be noted, will affect not only the breath alcohol reading in terms of assumed blood alcohol, but also breath readings expressed as alcohol in the breath.

average of the continuously analyzed exhalation. Continuous analysis of a breath exhalation can be done by an infrared analyzer such as an Intoxilator 5000. Reading "deep breath" can cause an overestimation of up to 10% in his opinion. That error can be overcome by re-breathing during the testing process. As described by him, the subject instead of giving 1 breath sample would breath into a bag-type device heated to a known temperature and then rebreath that same air five times. The air in the bag, averaged out by the rebreathing process, is then tested and a valid breath alcohol reading of alveolar air is obtainable. Any temperature variation problem is likewise removed. He quantified the improvement which would be added to breath results by a rebreathing technique as about one-third. Such rebreathing devices are now on the market and can be adapted for use with the Breathalyzer 900 and 900A.

Readings can be made to vary by deliberate breathing patterns of the subject. Thus, if he hyperventilates (deep breathing) for 20 seconds prior to giving a breath sample he can cause an 11% reduction in his reading. If he should be so foolish as to hold his breath for 30 seconds before giving the sample he can produce an inordinately high alcohol reading by as much as 16%. In the field both of those possibilities are eliminated by a trained operator following procedures in which he has been instructed.

**Body Temperature.** Average body temperature is 98.6° Fahrenheit (37° Celsius). Individual normal temperatures can vary as much as  $\pm 1^\circ$  Celsius. An individual's body temperature can vary during the day. A higher temperature causes more alcohol to be given off by the blood; a lower; less. Given a normal situation a reading of alcohol

in breath can vary by a  $\pm$  6.5%. An abnormally high temperature in an individual because of illness or trauma can give an erroneously high reading.

**Hematocrit.** Blood is a mixture of cells (red, white, platelets) in a watery solution called plasma. When alcohol is introduced into blood more of it is found in the plasma than the cells. Hematocrit describes the relative volume of the plasma compared to volume made up of cells (principally red). It varies in individuals and with it, apparent alcohol concentrations can vary by as much as  $\pm$  2.6%. These conclusions were based on blood studies of other experimental scientists. It is only the + variation which could be adverse to an accused. There is no way of determining hematocrit levels other than by a blood test in which the blood is separated into constituent elements in a centrifuge. However, if the critical blood-alcohol level is that in arterial blood reaching the brain, distinguishing between the relative amounts of alcohol in the constituent parts of the whole blood seems a rather useless enterprise at best.

**Respiratory Diseases.** Such diseases can bear on the Breathing Patterns discussed above. They can, hypothetically, result in an elevation or decrease of a reading of an indeterminate amount. A question from the operator - "Are you suffering from asthma, chronic bronchitis, emphysema, asbestos, silicosis, etc." would obviate this problem.

He concludes: "Breath testing for alcohol using a single breath method should not be used for scientific, medical or legal purposes where accuracy is important." All of his conclusions are based on the assumption that the

breath instrument is giving readings of projected blood alcohol concentrations and not in true breath alcohol concentrations.

He also agreed that using a 2100 to 1 conversion ratio probably about 85% of the subjects shown in the studies received either an equal or a lower estimated BAC than the BAC determined from their whole blood samples.

As to the physiological factors, he agreed that they are not necessarily sources of cumulative error but could very well be off-setting sources of error.

## JAMES W. PAYNE

James W. Payne, M.D. is a well known, well respected expert in the field of anesthetics as his Curriculum Vitae shows. He has received many honors from distinguished institutions of learning in the United Kingdom, the British West Indies and Sweden. He is a member of prestigious societies and has published extensively including evaluations of ingestion, measurement and elimination of alcohol in human beings. He is still active in teaching but no longer practices anesthesiology. In addition to teaching and practicing he has also done research in his chosen field.

He first became interested in testing to determine blood alcohol concentrations in 1963. He did work on blood, urine and breath analysis in that regard. In 1962 the British government had indicated that it intended to use as a standard for drunk driving an amount of alcohol in the blood of 80 milligrams per 100 milliliters (.08% under our notation). He was at that time (and until 1987) the Chairman of the Research Department of Anesthetics of the Royal College of Surgeons. The department undertook research to determine how difficult it might be to obtain blood samples and also explored alternative means of measuring alcohol in the blood. Their first experiments were with urine and blood samples. Then they moved to breath sampling with an infrared device reading directly the amount of alcohol in the breath. To convert to an assumed level of alcohol in the blood they applied a 2100 to 1 ratio then commonly used in the United States. In addition, they took from subjects simultaneous arterial blood samples (radial artery at the wrist) and venous blood (cubital vein) using a device which remained in the artery or

vein and which permitted the drawing of a number of blood samples over a period of time. In fact, blood samples (and breath samples) were taken at 20 minute intervals. Urine samples were taken when possible.

The volunteers used were four young healthy servicemen who drank a substantial amount of gin diluted with water. In 3, "mouth" alcohol disappeared after 20 minutes. In the fourth it took 50 minutes to do so but the explanation was thought to lie in the fact that that subject had a dental plate which probably trapped alcohol at the roof of his mouth. In plotting the results they immediately came to the conclusion that 1 to 2100 was not a fixed partition ratio (that is, blood to breath ratio) for every human being nor even a fixed one when applied to a particular human over the period of ingestion and elimination of alcohol. The reason is obvious - there are variations in the lung structures; the state of health of the lung, the hematocrit make-up of the blood, body temperature, for example. Those conclusions are shared by all serious experimenters. Using a conversion ratio of 2100 to change a breathreading to an assume blood reading does not give scientific accuracy. If used as an average ratio that ratio would probably be in the area of 2300 to 1.

A second study used 24 young servicemen who drank alcohol as before, having fasted, and having abstained from alcohol for the prior 24 hours. Readings of the arterial and venous blood as well as breath were taken at 20 minute intervals up to four hours from start. It was found that after the peak reading the correlation between arterial and venous blood was very good. Prior to the peak arterial blood produced higher readings than venous blood. Breath

readings produced levels generally lower than the whole blood when converted to assumed blood by the 3200 to 1 ratio. In a very few instances the converted breath reading was higher than that blood reading.

Based on that study it was concluded that urine testing was not practicable and that, if possible, arterial blood be drawn as most reflective of what was happening in the brain. Although venous blood was quite acceptable after the peak was reached, unless, in the field, one was sure of that fact, arterial blood was the choice. It is valid whether the peak has been reached or not.

Traditional methods of chemical analysis were used to analyze blood samples. Breath alcohol testing was done by an infrared laser which the department developed for the purpose. As noted above, he concluded that a breath test converted by a 2100 to 1 ratio to a blood reading did not and could not be used to determine exact levels of alcohol in blood for scientific purposes. They regarded breath testing in that fashion as a suitable screening method and no more. He deplored the use of such readings for law enforcement forensic purposes if the readings alone were used to convict. This was in 1966.

An interesting point which Dr. Payne made about capillary blood is that in the process of taking the sample (a pin-prick of the fingertip) the blood is exposed to air and some of its alcohol content is lost by evaporation. A low reading results.

He agrees that 2100 to 1 conversion ratio gives erroneous readings on the low side in most cases. There is no way of predicting when or in what types of individuals

it may read on the high side. But the possibility is there. His admittedly unscientific hunch is that it might happen in 1 out of 100 cases and whether the reading is pre-peak or post-peak makes no difference.

Dr. Payne conducted another study in 1976 and, with others, published the results. An infrared analyzing apparatus was constructed and calibrated to read amounts of alcohol in breath. Six volunteers, 5 men and 1 woman, were used. They fasted and abstained as those in the prior studies had. 5 drank 70° proof whiskey diluted with water. Alcohol was consumed in three minutes.

During the first two hours three breath samples of each were taken at about 5 to 10 minute intervals. In the third hour they were taken at 15 minute intervals. A mean value for these three was calculated. Blood samples (venous blood) were taken immediately after the third breath test, properly stored and handled and later analyzed by gas thermotography. Measured blood alcohol was then compared with calculated blood alcohol using the 2100 to 1 conversion ratio. Actual ratios were calculated for each paired blood and breath reading.

Mouth alcohol seemed to disappear in about 15 minutes. Peaks were reached anywhere from 18 to 85 minutes after the end of drinking. It was found that not only did the calculated blood/breath ratios vary among the six but that they varied with time in the same person. They concluded that alcohol concentrations in breath can be accurately determined but when 2100 to 1 ratio was used to convert breath readings into calculated blood readings, the blood results differed substantially from the measured results. As an average that conversion factor

is probably too low - because it gives readings generally lower than should be. Therefore, breath analysis converted to an assumed blood reading is not an acceptable method for accurately determining blood alcohol concentrations.

Of particular interest is the comment that the calculated blood-breath ratio from paired breath and blood samples is a number which "should be regarded as nothing more than a statistical convenience for defining the limits of a particular universe."

The United Kingdom has adopted a breath reading test for drunk driving with no conversion into a blood alcohol reading. The accused is entitled to have a blood sample drawn and analyzed; and introduced in evidence.

Dr. Payne agreed that if the breath reading instrument converting is an assumed blood alcohol result used a 2300 to 1 ratio, the results would be more scientifically acceptable (that is the exaggerated low reading bias would be eliminated). With the 2100 to 1 ratio the instrument gives readings of no value for scientific inquiry and of questionable value as evidence in court. Breath reading machines in the United Kingdom are now being calibrated with simulated solutions as 2300 to 1.

Where the converted breath reading over-estimated the true blood reading it occurred generally at lower blood-alcohol levels of .02 to .08. At .10 and above, the converted breath reading under-estimated the true blood reading.

## ALAN WAYNE JONES

Alan Wayne Jones is a chemist by education holding a Ph.D (1969) based on a thesis entitled "Equilibrium Partition Studies of Alcohol in Biological Fluids". He has been a research chemist at the National Laboratory of Forensic Chemistry of Sweden since 1978 and its Head of Toxicology since 1986. His very extensive background in empirical studies into blood and breath analyses for purposes of both scientific conclusions as well as forensic presentations is made abundantly clear by even a passing review of his curriculum vitae. He has probably done more experimentation in the field than anyone else; has probably published more articles in learned journals on the general subject than anyone else and receives deference from his peers, worldwide, as an expert on the subject.

Sweden has had a "per se" drunk driving law since 1941. It is two-tiered. The lower limit is .05 blood alcohol;<sup>1</sup> the upper limit is .15. (The Swedish system is slightly different in notation than ours. New Jersey expresses the amount of alcohol in blood as grams of alcohol per 100 milliliters of blood - e.g. .10 grams of alcohol (weight) per 100 milliliters of blood (volume) or .10%. In Sweden they express the measurement as milligrams of alcohol (weight) to grams of blood (weight). Because blood by weight weighs slightly more than water there is not a direct conversion from cc's of blood into grams of blood. Therefore, for example, .05 grams of alcohol in terms of milliliters (rather than grams) of blood would have to be expressed as .0525 grams per 100 milliliters. In all

<sup>1</sup>By way of comparison, Norway and Finland use the same .05 level. Denmark, Germany, France and the United Kingdom use .08 as the critical level - compared to New Jersey's .10.

of his calculations for testimonial purposes, Dr. Jones made that conversion so that his results are expressed in our terms. A person is guilty if his blood alcohol reading exceeds .05% (It is apparent that the penalty is far more serious if the blood reading exceeds .15%).

In the early days of blood testing for drunk driving in Sweden, the source of the blood sample was capillary blood from the fingertips. Since 1980 the blood sample has been designated as venous blood generally from a vein in the arm.

The breath standard which is to go into effect in July is to be an alternative source of evidence to that of the blood sample. Presently the Laboratory receives two tubes of venous blood; on each of those, three separate analyses are made and each of those by a different technician working independently on a different set of the same equipment. At the end of the day those six sets of results are compared and an average BAC (blood-alcohol concentration) determined.

The alternate breath standard is to be taken with the Intoxilizer 5000, an infrared device calibrated with a solution prepared for a partition ratio of 2100 to 1. The device then reads the subject's breath and directly reports its findings in terms of the amount of alcohol in the breath. It does not report (as does the Breathalyzer) a breath reading in terms of presumed alcohol in the blood. (So that it is important to note throughout that the 2100 to 1 "ratio" is used in two absolutely separate and distinct contexts: 1) a true partition ratio of alcohol from the prepared simulated solution - a very accurate preparation; and 2) a conversion of the breath reading then obtained

from the individual into an assumed blood-alcohol reading by the use of the same ratio of 2100 to 1. It is critical in reading the literature and in evaluation the expert testimony not to confuse the two. "Partition ratio" is apt to use when calibrating the instrument. It is meaningless and should never be used in referring to conversion of a subject's breath reading into a presumed blood-alcohol concentration. That should be designated the "conversion ratio".

For breath readings in Sweden .25 milligrams of alcohol per liter of breath will be the equivalent of .05 grams of alcohol per 100 milliliters of blood.<sup>2</sup> .75 milligrams of alcohol in a liter of breath is the equivalent of .15 grams of alcohol per 100 milliliters of blood.

The National Laboratory is directly responsible under the laws of Sweden for analyses of all blood samples taken for prosecution purposes in drunk driving cases - about 22,000 samples a year. Samples are supplied to the Laboratory by the police; results are reported back and, if required, an explanatory letter giving an opinion based on the results is supplied to the court (as is the procedure under Swedish law). The Laboratory also supplies expert testimony to legislative committees and Jones did so in connection with a new law effective July 1, 1989 in Sweden under which evidence of the amount of alcohol in breath will be as acceptable as the amount of alcohol (in whole blood) for purposes of prosecution and conviction. Up until the present time the positive law

<sup>2</sup>The figure of .25 mg. is arrived at by dividing .0525 grams by 2100 and converting to milligrams. The 2100 to 1 is the partition ratio of the simulated alcohol solution used to calibrate the machine.

of Sweden has required blood analysis for that purpose. Although Breathalyzer readings of alcohol in breath as converted to presumed alcohol amounts in blood have not been available for forensic purposes, Jones has complete familiarity with the instrument and has used it in experimentation for many years.

Among other areas he has worked on the precision and accuracy of blood and breath testing; the metabolism of alcohol in the body; absorption, distribution and elimination of alcohol; the effects of alcohol on behavior of people. He has also conducted experiments with narcotics such as morphine; the interaction of morphine and alcohol and a wide range of other topics in the broad field of biological alcohol research. In the course of that work over the last 20 years he has done studies of comparative blood and breath samples from over 100 individuals who acted as volunteers for the various studies.

For his various experiments over the years Jones has used a standard procedure. Volunteers are paid a small fee to compensate them for the inconvenience of having blood samples drawn.<sup>3</sup> They arrive, typically, at 9:00 a.m. Blood and breath samples are taken to be sure that there is no measurable alcohol in their systems. They then drink a specific amount of alcohol given in accordance with their body weight. The normal does for an average-weight male is about 5 ounces of whiskey consumed in about 30 minutes. It is expected that this will cause them to "peak" at about .10%. For the following seven or eight hours "paired" samples of breath and blood are taken at 15 to 30 minute intervals. For breath, a second test

<sup>3</sup>Up to 1983 these were capillary samples; after that venous samples.

is always given. The breath samples are "end-expired" (alveolar) breath. Duplicate or triplicate measurements are made on the blood samples. From the paired results plottings are made on a graph for each individual with time on the horizontal and BAC values and BrAC values separately expressed on vertical axis. A series of points for each pair is developed which, when connected give two curves of the readings (a BAC curve and a BrAC curve) over time, for that individual, showing absorption, peaking and elimination of alcohol in the blood. In the post-peak time (a time of gradual decline in blood-alcohol levels) the individual partition ratios are calculated. For all of the individuals he has ever examined the average of this post peak ratio would fall between 2300 to 1 and 2400 to 1. In analyzing the curves developed for each individual it is obvious that the ratio varies dramatically in pre-peak measurement and not much at all post-peak.

The studies lead him to conclude that low ratios (below 2100 to 1) can occur pre-peak, but that post-peak the ratio is always greater than 2100 to 1. The results of the plottings of paired blood and breath reading show a curve invariably skewed to the right because absorption time is always far less than elimination time.

With lesser quantities of suggested alcohol (such that a peak in the area of .04 or .06 occurs) in those low BAC's there is a tendency to get a higher ratio - in the area of 3200 to 1 than one would with sufficient alcohol present to raise the reading to .10.

Based on those considerations he posits his view that there are hazards in using ratio variables in statistical analysis. He certainly does not recommend such use.

He has run extensive experiments comparing objective indicia of a person's being under the influence, with Breathalyzer results and found that during the absorption phase, the BAC reading gives a better picture of impairment than would a simultaneous venous blood sample. That is because the breath reading gives a better picture of what is occurring in the arterial blood than does the venous blood. Alcohol in breath is a better reflection of alcohol in arterial blood than is the amount of alcohol present in venous blood. Post-peak the Breathalyzer results and blood analysis results read to be nearly the same. They have reached a state of practical equilibrium. However, because of its built-in negative bias the Breathalyzer tends to read lower than the blood analysis.

He enforced those conclusions from a series of studies discussed in detail. #1 was a 1975 study of 23 healthy college students using comparisons of capillary (fingertip) BAC and Intoximeter readings. Of all of the paired samples taken from those individuals covering both pre-peak and post-peak stages over seven hours (some 78) only three gave a calculated ratio of less than 2100 to 1. (it is such a lower than 2100 to 1 ratio which can lead to over-reporting by the breath instrument). One occurred at a very low BAC level of .015; one at .08 and one at .11 - and at those levels, although the BrAC reading was higher than difference was very, very small.

#2 was a study in 1988 using venous blood rather than capillary blood and an Intoxilyzer calibrated at 2100 to 1. Samples were taken in the same manner as before over 6 or 7 hours after the end of drinking 6 or 7 ounces of whiskey.

His conclusion, again, is that while in the pre-peak state when increasing amounts of alcohol are being absorbed into the blood, the BrAC reading seems to overstate the BAC reading. However, since BAC is from venous blood and the BrAC is close to arterial blood, there is nothing false about the higher BrAC reading. It is what one would expect for it takes more time to bring venous BAC up to the level of BrAC or arterial blood flowing in the brain. In all of those cases the measured BAC never rose above the .10% level and the only times the BrAC gave readings about .10% was when taken immediately after the end of drinking when "mouth" alcohol<sup>4</sup> was present.

#3 was a similar study in which the breath measuring instrument was an Alcometer EBA calibrated at 2300 to 1. 12 subjects were used. He again found that the only time the breath instrument overread measured BAC was in the rapidly rising absorption period and then only slightly. In no case was there an overreading after 30 minutes from the end of drinking at any BAC approaching the .10% level. In the 3 cases in which the BrAC was over .10% and the venous BAC was under .10% (other than "mouth" alcohol readings) the readings were so close to .10% that in two cases the difference was very, very small, e.g. .105 to .099, 30 minutes after the end of drinking. At all other points (i.e. all after the peak and most before the peak) the BrAC (at a 2100 to 1 ratio) understated the BAC.

<sup>4</sup>Based on his experiments he concludes that "mouth" alcohol evaporates at about 20 minutes after end of drinking.

#4 was in 1985 study involving 30 Swedish policemen - volunteers. Their ages varied from 22 to 58. An Alcometer AE-DI calibrated at 2100 to 1 was used. Capillary blood samples were taken. Volunteers were given between three and seven ounces of whiskey to note individual responses to differing quantities. Test results spanned 7 or 8 hours. Results confirmed his earlier work. In the post peak state the 2100 to 1 ratio uniformly underestimates the actual BAC. Shortly after drinking, in the rapid absorption pre-peak stage, the BrAC can overestimate the BAC. "Rapid" absorption is a term related to the fact that his subjects fast before drinking. A large amount of food in the stomach will tend to slow absorption. On empty stomachs (as in all his other experiments, a peak reading was reached about 30 minutes after the end of the drinking).

Out of a total of some 210 breath/blood pairs for the 30 subjects there was correlation between the two in 98% of the pairs.

#5 was a study done in 1988 with just one subject. The purpose was to test out a new breath machine for use in Sweden - the Intoximeter 3000 calibrated at 2100 to 1. The subject was a newspaper reporter. Venous blood samples were used. The man was tested at 3:00 p.m. and showed a zero alcohol level. He first drank a can of beer; washing out his mouth with water; waited 10 minutes and blew into the Intoximeter. A blood sample was taken. He then drank another beer; washed out his mouth; waited 10 minutes, blew again and another blood sample was taken. This procedure continued for four hours. The situation was one then, of steady drinking over a long period of time. His plotting was a constantly rising BAC so that at the end of the four hours it was

almost .20%. The BrAC tracked the BAC curve almost exactly but underestimating the BAC slightly at all points except one, when they matched. In this experiment, because of the steady drinking a peak was not reached by the end of the four hours. This led Jones to conclude that even in the absorptive period if care is taken to exclude "mouth" alcohol, the BrAC at 2100 to 1 will underestimate the actual ABC. In this experiment blood samples were analyzed in a laboratory separate from that of the experiment.

Jones also commented favorably on a 1964 study by three British scientists. He was familiar with its methodology. It was valuable because a wide range of BAC samples was obtained - from .01 to .14. A Breathalyzer 900 was used for breath readings. That study of about 100 paired samples shows that on average the Breathalyzer reading underestimated the measured BAC by 13%. Of the total pairings only three showed a BrAC higher than the BAC - one was at a .01, a second at .03 and a third at .14. In the latter case the BrAC was .14 and the BAC .139.

He was familiar with another British study conducted with paired samples of venous blood and readings from an Intoximeter 3000 calibrated at 2100 to 1. There were 815 pairs. Blood/breath ratios were calculated. 98.2% of them were 2100 to 1 or more. 1.8% were less than 2100 to 1 (meaning that the BrAC did to some extent overestimate the BAC). 25% of the calculated ratios were in the range of 2300 to 2400. The plotted curve of the frequency distribution showed a decided skew to the distribution rather than an assumed bell-shape.

One interesting fact he pointed out based on another experiment involving the taking of venous blood samples from the right and left arm of an individual as well as capillary samples from his right hand and left hand fingertips - all at virtually the same time - was that there was a distinct variation in those readings. The indication is that the source point of the blood sample has an effect on what BAC value is to be used for purposes of comparison with a BrAC reading. That variation could be as much as .01.

He opines that two separate breath tests given a few minutes apart will give a better indication of the alcohol load in the brain than will one blood sample. That is simply because of the known scientific value of a repeat test when determining accuracy and reliability of results. A repeat test eliminates the possibility of gross error.

Jones points to three factors involved with Breathalyzer testing which cause its results to underestimate the subject's BAC. The effect of the four is cumulative.

1. The calibrated ratio of 2100 to 1 is set below the generally agreed average ratio for all adult individuals of 2300 to 1. That results in an underestimation of BAC of about 8 or 9%.

2. Truncation of the BrAC reading causes further underestimation. Any reading from .100 to .109 is reported at .10.

3. Taking the lower of two consecutive breath readings within .01 of each other will, compared to the average of those two readings give an average benefit of 5% lower. The total average benefit (or low reading) would be about 15%.

Under the Swedish proposal for breath testing two readings a short time apart will be taken and averaged from that average .015 will be deducted (15% at the .100 level). That final figure will be used for prosecution and conviction can be based on it if it exceeds .05%.

In his studies he found a range of times from end of drinking to the peak BAC of from 0 to 100 minutes. The process of absorption can be slowed by the quantity of food in the stomach and can vary with the make-up of the stomach's contents. Other bodily factors such as metabolism, heart rate and general physical condition will have an effect making absorption either faster or slower. On an empty stomach most people reach their peak BAC within 30 minutes after end of drinking. Some peak almost immediately. In all of the subjects he studied he found only two who took 100 minutes to reach their peak. They were oddities and he could not assert a specific reason for that result.

He agrees that a basic assumption of breath testing is that the expired breath from a subject has a temperature of 34C. A variation in that temperature can cause some variation in the individual's lung partition ratio - one way or the other.

Based on his studies he found that variation in hematocrit levels in blood could cause a variation in the blood/breath ratio of up to 2%. Generally it is known that men's hematocrit is 47 and women's about 40. However in studies involving both men and women he was never able to substantiate a difference in their ratios just stemming from that hypothetical hematocrit difference.

## KURT M. DUBOWSKI

Kurt M. Dobowski, Ph.D., is (with the possible exception of Jones) probably the most active person in the world in the field of testing for the presence of and measure of alcohol concentrations in human beings. One must read his curriculum vitae and list of publications to appreciate the stature of the man in that field. His experience is vast and varied. He was a most impressive expert witness.

At the University of Oklahoma where he holds a tenured lifetime Distinguished Research Professorship in the Department of Medicine, he is effectively a full-time researcher as well as the Director of Forensic Science at the Oklahoma Health Science Center. He serves as the State Director of Tests for Alcohol and Drugs for the State of Oklahoma. That position puts him in administrative charge of testing drinking drivers for the State. He also lectures students and faculty in forensic toxicology. He deals with law enforcement agencies on all levels. He is responsible as State Director for the training, instruction and certification of Breathalyzer operators.

He defines the blood/breath ratio as an apparent relationship in which the numerator is measured weight of ethyl alcohol in a given amount of whole blood from a particular part of the human body and a denominator of a measured weight of alcohol in a given amount of breath - the assumption being that the breath is 100% alveolar "end expiratory" - breath and that the subject being tested is in the post-peak state of alcohol concentration. 2100 to 1 indicates a condition in which the weight of alcohol in blood is 2100 times the weight of

alcohol in breath - each being measured at the same time. The ratio itself is very sensitive to any change in the blood measurement or in the breath measurement. It will change, for a given individual at a given moment in time, with the source of his blood that is being measured. It will change with the level of lung air being sampled - whether it is the breath first expired or blown or whether it is the deep breath, end-expiratory breath or alveolar breath (all fairly synonymous terms in the literature). The ratio for an individual is, as he termed it, "a moving target."

During the absorptive state (or pre-peak concentration) it is the general consensus that the concentration of alcohol in arterial blood is substantially greater than that of venous blood.

Outside of a laboratory experimental setting it is difficult to tell whether a person is in his pre-peak or post-peak state.

If less than 100% alveolar air is obtained in the breath sample the ratio will calculate to a much higher number than it should otherwise. 2100 to 1 was once considered an average ratio for healthy adult males. In fact, it has been rather conclusively shown that the average is off by about 10% and should be 2300 to 1.

The ratio in a given individual, if it could be calculated under normal conditions, would thereafter change if, for example, there were a change in body temperature or disease of the lungs. No one knows what a particular individual's ratio is. It is nothing if there is no alcohol present. It becomes finite only through a mathematical calculation (division) based on experimental simultaneous

calculations of breath alcohol and blood alcohol - and on an assumption that all controls, test procedures, instrumentation and analyses are working correctly.

For scientific work, one should use an assumed ratio of 2300 to 1 because that is what the average of all people tested by him beginning in 1975 comes out to. Some several hundred subjects were involved.

The term absorptive and post-absorptive states with regard to alcohol concentrations in blood have meaning in a drunk-driving setting only in regard to the highest or peak BAC an individual will reach during a particular drinking experience. And the particular peak that is critical is the peak BAC in the blood supply into the brain (arterial blood from the heart).

In his studies he has found that various individuals will peak after the end of drinking from as little as 9 minutes to as much as 4 hours. In males the average time to peak is 45 minutes and in females because of their different distributions of water and liquids in the body - about 20% faster. These are figures for basically healthy men and women. As a general rule, the more alcohol that is ingested, the higher the peak BAC will be reached and the longer it takes to reach it. Drinking patterns will obviously affect both the peak and the time to reach it. There will be different results from the same individual if he drinks one large quantity of whiskey at a gulp or if he sips the same amount over a more extended period of time. There is a difference in the time it takes to peak if one drinks on an empty stomach or on a full stomach.

Dr. Dubowski has done hundreds of studies using paired readings obtained from simultaneous Breathalyzer analysis and gas chromatography analysis of the same breath sample to explore the process of absorption, distribution and elimination of alcohol in the human body. This side-by-side testing of a breath sample is called analyzing a "submitted specimen". For 703 such pairs the average difference between the Breathalyzer test result and the gas chromatograph result was .00063 grams per 210 liters of breath. For all practical purposes that difference was 0. The greatest variation in those 703 specimens was .01 grams per 120 liters. He concludes, as have others, that the Breathalyzer for the purpose of making a breath alcohol analysis performs to near perfection.

It is possible that a Breathalyzer calibrated with a 2100 to 1 designed simulator solution can, when its breath reading is converted to a supposedly co-existing blood alcohol concentration, overstate the actual BAC. For example, the Breathalyzer measures alcohol in the breath at .105 grams per 210 liters. Truncating the third decimal place, it would report the supposed BAC result as .10 grams per 100 mileters or .10%. However, if that same individual is actually running an unusually high body temperature the .105 grams per 210 liters is higher than it should be compared to a normal partition rate in those lungs - only the Breathalyzer is not aware of the false reading. It dutifully reports it as .10% when an actual whole blood sample might show .099%. Biological variability such as body temperature could cause that to happen. While he has studied the known differences in hematocrit levels for men and woman he cannot tie that into erroneous readings when the breath result is converted into a supposed BAC. Nor does he think the

limitations placed on a person's breathing by asthma or chronic pulmonary disease have any measurable effect on the Breathalyzer since it needs only 52.5 milliters of air for its measurement - an amount "which anybody who is alive and breathing can deliver regularly."

In Oklahoma since 1982 the law requires that when a breath sample is taken for the purpose of obtaining a converted blood alcohol reading, the testing officer must retain a trapped sample of a portion of the same breath tested or a comparable additional breath sample be taken and retained. The same requirement applies where blood samples are taken and the results used for prosecution purposes. If, during the next 60 days the defendant asks that the retained sample be tested it must be and the results are evidential. If he does not request the additional test the retained sample - at the direction of Dubowski - as State Director of testing, - is sent to his laboratory. There they are analyzed by gas chromatography and the results noted. They are then compared with the recorded results of the original Breathalyzer test, which results are also, by law, forwarded to his laboratory. Blood samples are compared in the same way but they are relatively few in number. Some 35,000 of these comparable results are generated per year.

Typically, when a subject is brought to the test site and after a report form is filled out, the test officer, having observed the subject for at least 15 minutes (to be sure that there is no "mouth" alcohol present,) takes two breath samples with the Breathalyzer 900 or 900A. The first is read out in grams per 210 liters of breath - the breath/alcohol concentration (BrAC). The second sample, collected in the Beathalyzer is "trapped" in an hermetically sealed

container and held for the 60 day period by the arresting agency. The direct results are recorded on paper. After the two samples are collected, a simulator test is run with a known alcohol solution heated at 34° C and run through the Breathalyzer to check its calibration. As noted, if not required to be checked within the 60 day period, the sealed sample is sent to his laboratory.

The giving off of a certain amount of alcohol from the arterial blood flowing through the lungs into the breath through the interchange in the alveoli in the lungs takes place in the core body temperature which is 37° or 37.5°C (98.6° Fahrenheit). There will be an equilibrium established between grams of alcohol per volume of breath and grams per volume of blood. This is the partition ratio for that individual at that moment of time. As the breath leaves the alveolar region and moves up the airways to the mouth, it cools somewhat so that as it leaves the mouth when blown into the Breathalyzer it is slightly above 34° C. (The Breathalyzer itself is heated to 45° - 50° C.)

In Oklahoma the Breathalyzer reports alcohol in grams per 210 liters of breath (BrAC). That is the factory calibration. All Breathalyzers are calibrated in that way when they leave the factory. Some have scales that are placed directly over the gr/210 liter scale under the needle so that, for example, instead of reading .10 gr. per 210 liters of breath - at that same point of needle deflection and with a substitute blood/alcohol scale on top of the original gr/210 liter scale, the needle will be read in .10 gr per 100 ml. of blood. In simply substituting one scale for another the reading is converted from breath/alcohol (precisely read) into a supposed blood/alcohol reading and - since the instrument was calibrated at 2100 to 1

by the known simulator - its read back into blood/alcohol is at the same 2100 to 1 ratio. It is this conversion - which assumes that the subject's actual deep lung partition ratio is 2100 to 1 (when there is no way of directly knowing that) which causes an arguable potential for over-reading in the supposed BAC. That can occur if the actual lung partition ratio for that individual at that moment is less than 2100 to 1 - and there is no way of ever knowing that - because there is no way that a simultaneous arterial blood sample can be taken.

Dr. Dubowski is clearly aware of the arguable problem posed by the conversion factor. To avoid the argument he has recommended and the Oklahoma legislature has adopted an alternate blood/breath standard (as have a number of other states and countries). A conviction is justified if a subject's BrAC directly measured by the Breathalyzer exceeds .10 gr. per 210 liters or if his blood/alcohol measurement exceeds .10 gr. per 100 ml. It is the result at the time of the test that counts.

Based on all of his studies of some 390 paired results from several hundred subjects, his experience has been that when Breathalyzer readings are converted to blood/alcohol readings using a 2100 to 1 ratio, in 86% of those pairs, the converted BAC will underreport or underestimate the measured venous whole blood BAC, in the post-peak state of healthy adult males. In 2.6 percent of the pairs the supposed BAC and actual BAC turned out to be the same, and in 11.4 percent of the pairs, the supposed BAC was higher than the actual BAC (that is, for those pairs the calculated blood to breath ratio for that subject at the time the paired samples were taken was lower than 2100 to 1 and at the .10% critical level. Even where

the breath analysis converted into assumed BAC over-estimates the true BAC (the 11.4%) many of those are harmless. If for example the converted BAC is reported it is truncated and becomes .10. Of the 11.4% total over-estimation only 2.3% would overestimate at the critical .10 level. The others would be lower - where they do not count - or higher, where it would not make any difference, or so close, that with truncation they would be the same. But, again, the true blood used is venous blood - not arterial blood.

The lowest calculated blood - to breath ratio ever found by Dr. Dubowski was 1706 and that was in just one pair. His highest calculated ratio was 3063 to 1. He knows that others have reported finding lower and higher calculated ratios but he trusts his figures because he knows how they were obtained. Assuming that the supposed blood/alcohol reading was .10 gr. per 100 ml (.10% by weight in the blood) and that the calculated blood to breath ratio was 1706 instead of 2100 to 1 then the true venous BAC would be .081 or .08. But again, the venous blood is not the blood causing the problem in the brain. The best measure of the arterial BAC is the deep lung breath and there is really no reason to say that the 1706 is a true blood to breath ratio because venous blood was used to calculate it. As can be seen, the whole argument surrounding an assumed lung partition ratio of 2100 to 1 versus a calculated conversion ratio of 1706 to 1, becomes somewhat circular and inconclusive. Which is why the most experienced men suggest that it leads nowhere.

When considered in a forensic context, as Dubowski and others state, the question is, does the 2100 to 1

conversion factor overstate the probable arterial BAC entering the brain. Based on empirical data - not statistical analysis - they hold that it does not.

In the absorptive phase (pre-peak) a breath test shows that is happening at that moment in the brain. Venous blood does not for its BAC is lower than arterial BAC as absorption continues to elevate the alcohol concentrations.

He too is an advocate of the administration of two separate but closely related breath tests being administered to a subject as a check on accuracy of results. They eliminate the possibility of mouth alcohol and, if the lower of the two is used, given an additional benefit to the accused.

Because the core body temperature of woman is, in general, slightly higher than that of men and is also slightly elevated during the menstrual cycle, in theory that could have an effect on their lung partition ratio (the higher the temperature the more alcohol will escape from the blood into an equilibrium state in the lungs) - giving a slightly lower blood to breath ratio. However, Dubowsky believes the change would be so small as to affect only the fourth numeral in the ratio, e.g. the difference between a healthy adult male and a healthy adult female (all other factors but temperature being equal) the male might have a ratio of 2268 and the female 2260. The taking of oral contraceptives could, theoretically, have a similar effect. That has not been demonstrated empirically.

As Dubowski points out, the reason that precise breath alcohol readings are converted to supposed blood alcohol

results is historic. He believes that a breath standard should be used for breath samples and a blood standard for blood samples. However, in the early days of drunk driving law enforcement, based on scientific analysis, the only substance analyzed was blood. By the 1940s almost all states stated the offense in terms of alcohol in the blood. By the time breath analyzing instruments were developed, the blood alcohol tradition had been established and there was a tendency to have the breath instrument read out in an apparent blood alcohol concentration by means of a conversion factor. At the time those active in the field believed that 2000 to 1 was good enough; later it was refined to 2100 to 1. (Now it is well understood that a true average conversion ration should be about 2300 to 1). In a sense, it is unfortunate that a conversion factor was ever used, but that is how it developed. New Jersey is still one of the states that uses a blood alcohol standard only.

$$\text{The calculated ratio } \frac{\text{BAC}}{\text{BrAC}} = \frac{\text{gr. per 100 ml}}{\text{gr. per 210 liters}}$$

Therefore the ratio will vary as either the numerator or denominator varies. In the same individual at a given instant in time the ratio will vary depending on where the blood sample is taken - arterial, capillary, venous? Is the breath sample expired alveolar breath correctly collected or is it a sample containing some dead space air giving a lower alcohol concentration? Is the blood sample taken in the pre-peak, peak or post-peak states of absorption? When one considers the many variables going into the readings, as Dr. Dubowski put it, the calculated blood to breath ratio is a "moving target".

Even though Oklahoma does have a per se law - that is a conviction based solely on a breath alcohol or blood alcohol reading in excess of the stated standard - Dr. Dubowski believes it to be a mistake. It places over-emphasis on a single piece of evidence. He believes that the whole traditional evidential picture should be presented, i.e., evidence of inadequate driving; evidence of impairment of the driver (physical coordination tests), physical indicia of alcohol consuption and then a properly conducted breath alcohol analysis (even with a converted blood/alcohol reading). In that way neither conviction (nor exoneration) will depend on just one item of evidence, in his opinion. He believes that too much emphasis is placed on the test instead of on the person and the performance. That opinion is more strongly held as the penalties for drunk driving become increasingly harsh.

For both scientific and forensic purposes the best way to determine alcohol concentrations is breath testing. It is easy to analyze and reflects the alcohol reaching the brain. If a subject is able to participate breath alcohol analysis is to be preferred. Blood is the next most useful specimen if breath is not available.

## NIZAR K. SHAJANI

Nizar K. Shajani is a Forensic Specialist employed with the Alcohol sections of the Royal Canadian Mounted Police Forensic Laboratory in Vancouver, B.C. He is a trained chemist having received his B.S., Chemistry, from the University of East Africa, Nairobi, Kenya and his M.S. in Forensic Science from the University of Strathclyde, Glasgow, Scotland.

After attaining his Master's Degree he was employed in the Forensic Laboratory in Kenya and conducted analyses on many samples of blood and other body fluids to determine their alcohol content. His present duties with the R.C.M.P. laboratory involve similar analyses as well as instructing trainees in the use of the Breathalyzer in courses conducted by that Laboratory. He has personally given numerous breath tests to drinking subjects. He analyzes and certifies test solutions for use with the Breathalyzer. He is fully familiar with the extensive literature on the physiology of alcohol in the human body - e.e., its absorption, distribution and elimination, as well as its pharmacology, i.e. its effect on a person's ability to operate a motor vehicle. He has written extensively on his work in the blood-breath alcohol measurement field and has had many of those articles published. He is fully familiar with the theory and operation of the Breathalyzer.

Canada has a *per se* drunk driving law. Anyone who drives with an amount of alcohol exceeding 80 milligrams in 100 milliliters of his blood (the equivalent of a .08% reading) is guilty of the offense. At a level of .08 or lower, he may be found guilty of driving while impaired. For breath testing the Breathalyzer 900 or 900A is used by

the R.C.M.P. and uses 2100 to 1 conversion factor to give an output reading in a blood alcohol percentage.

Shajani conducted one study on correlation of readings obtained by the Breathalyzer (breath samples read out and converted into BAC results) and by blood samples taken within close time proximity to the breath sample. This study involved 135 subjects - trainees in various Breathalyzer training courses he has conducted. The ages of the trainees varied from twenty-two to forty-five. All were healthy police officers. There were a substantial percentage of females involved.

The procedure followed was this. About one-third of the class would volunteer to be subject. They were given alcoholic beverages to consume. Shortly after the end of drinking the subjects would give breath samples to Breathalyzers operated by other trainees under the supervision of their instructors. The identification of the subject and reading produced was duly recorded. Continuous testing of the subjects went on at about 15 minute intervals thereafter. Then, at least an hour after the end of drinking, a qualified person would draw a venous blood sample within minutes after or before the taking of a breath sample. The time of taking each would be duly noted; the blood later analyzed by gas chromatography and reported back for comparison with the breath result. Shajani then plotted these 135 "paired" results on a graph with the blood reading on the horizontal line and the breath-converted-to-blood reading on the vertical axis. Only breath results obtained close in time with the blood samples were "paired". In 132 of the 135 pairs the breath generated alcohol concentration was reported as being below the whole blood alcohol concentration. In 3 instances the reported results

were the same. In no case did the breath reading exceed the blood reading.

By going back into records which the RCMP maintained for similar comparisons in earlier training courses, Shajani was able to assemble 670 pairings (including his own 125). They were obtained in the years from 1970 to 1985. He plotted those pairs in the same fashion.

In 666 of the 670 pairings the reported breath reading was lower than the analyzed blood readings - and in most cases by a rather obvious amount. There were 4 instances in which the breath reading exceeded the blood reading. In none of the 4, however, was the difference more than .01 - a difference attributable to known lack of absolute precision in either the breath testing or the blood testing. The breath readings were .04, .09, .095 and .10. The comparable blood readings were .03, .08, .09 and .095.

Asked his opinion of the scientific accuracy of a Breathalyzer reading stated in a converted blood alcohol concentration, Shajani opined, as did all other experts, that the reading was not considered scientifically accurate. The reason is that the reading is consistently low compared to actual whole blood analysis from a sample taken almost simultaneously with the breath sample. He attributed his low bias (as did others) to the calibration of the equipment to an assumed conversion ratio of 2100 to 1. His calculated mean ratio for the 135 paired sample study was 2428 to 1 and for the 670 paired study, 2436 to 1.

For forensic purposes, however, he is satisfied that its readings are acceptable; that analysis of the breath

does not, in fact overestimate the amount of alcohol in the blood; that where it errs, it is on the low side. He also adds that setting the meter needle to the "start line" gives an added negative bias to the result of up to .003. That fact also proved out based on his calculations from the paired information. Lastly he opines that "truncation" of the machine reading is a bias always favorable to the accused where there is a three decimal place reading over .100. He derived that opinion from a review of the data for the 135 pair study. For that study the Breathalyzer readings had been stated to three decimal places.

The Breathalyzer, the sum, does not overestimate the amount of alcohol in the breath. That is simply a chemical reaction which takes place within the machine. If there is a valid breath sample and if the test ampule is within stated tolerances and there is no other malfunction present it reads alcohol in breath with a very high (i.e. scientifically acceptable) degree of accuracy. It is only in the conversion of that reading of alcohol-in-breath to alcohol-in-blood using an assumed ratio of 2100 to 1 that inaccuracy occurs - and that, as stated, will be on the low side. There is one other condition which could cause a higher breath-converted-to-blood alcohol reading than that derived from the blood analysis. That is the presence of "mouth" alcohol which is present in the subject until no more than 20 minutes after the last drink. A test during that period might give an inordinately high reading. After 20 minutes from the last drink that condition would have disappeared. Likewise, a person running a high fever tends to give an elevated reading compared to what it would have been at his normal body temperature.

While it does not bear precisely on the factfinding function of this Court, Shajani also discussed the dynamic effects of ingestion of alcohol on the human body. Absorption of alcohol in the blood stream begins a short time after reaching the stomach. Considering the state of a social drinker who might be ingesting alcoholic beverages over a two or three hour period, it is quite evident that during the time some of the original alcohol is being eliminated ("burned off") while additional alcohol is entering the blood stream. Readings of breath or blood samples during that time do not distinguish between "old" or "new" alcohol. They simply report an amount present at a specific moment. A term such as "peak" alcohol reading is, therefore, somewhat nebulous. Continuous breath samples of the individual over the two or three hour period might well produce a graph of ups and downs in the readings. Terms such as the "absorptive" or "post absorptive" states are meaningful only where there has been one fairly rapid ingestion and then complete cessation of further drinking. Even with the two or three hour social drinker there comes a point where drinking stops; where at some time thereafter a maximum alcohol concentration is detectable and from which thereafter it is eventually reduced to zero through natural elimination. In that broad sense, any readings less than the maximum (or peak) may be termed the "absorptive stage" and any readings thereafter the "post-absorptive stage". Shajani was interested in the time a subject takes to "peak" - defined as the time from the last ingestion of alcohol to the highest reading attained thereafter. To determine if that a time could be quantified he conducted a series of studies.

The first was in 1984 with 16 healthy volunteers - 8 male and 8 female., They were interviewed in private and

asked to rate themselves as social, moderate or heavy drinkers. All then consumed a light lunch between 11:00 a.m. and Noon. Drinking commenced at 2:00 p.m., after a Breathalyzer reading declared them alcohol-free. They then consumed known quantities of alcohol in spirits, wine or beer as they chose. A drink of spirits (hard liquor) was consumed about every 20 minutes and one of wine or beer about every 30 minutes. The subjects sat in groups of 3 or 4 playing cards and chatting. Potato chips and peanuts were provided. Taped music played in the background. After each drink a waiting period of at least 10 minutes was provided to eliminate mouth alcohol. Then a Breathalyzer test was made. A breathalyzer 900 or 900A was assigned to each subject. Duplicate tests were run and standard solutions used to check the correct functioning of the instruments. The age of the subjects ranged from 26 to 34 for the males and 20 to 28 for the females.

The drinking session was completed in 4 hours. Duplicate tests were continued to be run thereafter at 15 minute intervals.

One result immediately noted was that a breath test 10 minutes after start did not allow enough time for elimination of mouth alcohol. A duplicate test 5 minutes later did. Therefore, in all cases only the second reading was used for the study.

Results were plotted against a time base. The times to reach a maximum reading after the last drink varied from a low of 17 minutes to a high of 68 minutes with a mean of 35 minutes. These figures generally accord with reported findings of others in the literature of a range from 20 to 40 minutes and a mean of 30 minutes. The

maximum of 68 minutes was the result of a female drinking a mixture of Kahlua and milk.

Shajani then conducted three other experiments. In the second, alcohol was consumed after a large meal. He found that a large amount of food in the subject's stomach will slow the absorption process initially, but thereafter, it will rise rapidly. Under essentially the same test set-up, a time range from 1st drink to peak of 0 to 40 minutes was found with a mean of 17.5 minutes.

The third study was conducted in the same fashion but with the subjects having fasted from two to three hours before commencing drinking; then they drank. After stopping they were measured a peak. Thereafter, as the alcohol level started to drop, they were fed and began drinking again. The time was measured from the end of the second drinking period to the second peak. The range to attain the first peak was 0 to 25 minutes with a mean of 11.7 minutes. The range to the second peak was from 12 to 32 minutes with a mean of 21.3 minutes.

The fourth experiment involved the ingestion of a large amount of alcohol - about 20 ounces per hour. The range from cessation to peak was 17 to 74 minutes with a 36 minute mean.

Elimination of alcohol, which was also tracked in the same studies, is much slower and more gradual than absorption.

During the studies a blood sample was taken from each subject after an hour after the end of drinking. The

analysis of it showed it to be at the alcohol level reported by the Breathalyzer.

From the foregoing Shajani concludes that peak alcohol concentrations are reached at about 30 minutes after the end of drinking with a range to 20 to 40 minutes (excepting the 68 minutes previously noted and on 74 minute period for a subject who consumed a bottle of champagne in one-half hour). Therefore, in the pre-peak period when blood alcohol is rising, the Breathalyzer can be expected to give a higher result than venous blood analysis because it is reading arterial blood (affecting the brain) which has not yet reached the venous system. Once the peak has been reached, arterial and venous blood equilibrate and both tend to be reduced with elimination in the same amounts so that breath and blood readings are the same. In any event, based on the practicalities of the ordinary drunk driving arrest situation (stopping, on the scene inquiry, transportation to headquarters, set up of the breath machine, routine questioning) Shajani opines that almost all breath tests in the field can be expected to occur in the post-peak state.

Shajani also conducted his own experiments to test the accuracy of the Breathalyzer readings using known solutions. That study was reported in the literature and marked P29 Ev. He wished to check the manufacturer's claim that the instrument, in reading out in breath alcohol concentrations, was accurate at better than  $\pm .01\%$ . He found that results obtained from using known low concentrations of alcohol to relatively high concentrations produced linear results and that the claimed error of no more than  $+\text{-.01}\%$  was correct for all readings between .05 and .30. In short, he found a standard deviation of

.003; three standard deviations (acceptable for all scientific notations) of .009. The Breathalyzer underestimates the blood values in the simulator in all cases except relatively low (below .05%) concentrations. The underestimation is directly attributable to the 2100 to 1 ratio by which it converts a breath reading into a supposed BAC.

For forensic purposes, assuming a correctly taken breath sample and a properly functioning machine and the expiration of at least 15 minutes to eliminate mouth alcohol the Breathalyzer result never overestimates arterial blood alcohol content. With the expiration of at least 30 minutes after drinking, it will not over-estimate venous blood alcohol concentrations. Two tests given within a short period of time are far superior to one with regard to validity of results. One very low result out of two may indicate a poor breath sample and the need for a third test.

It is possible that a reading of .10% produced by a Breathalyzer analyzing alcohol in breath and reading out in alcohol by weight in blood can make a mistake of .01 and that, conceptually at least, under a per se rule, a subject with that reading may be unfairly convicted. That is conceptual only. There is no way of measuring alcohol in arterial blood at that time and unless a venous blood sample is simultaneously taken, there is no way of comparing results. The venous blood reading might well have been .11.

However, if a second breath test taken within a short time confirms the results, the trier of the fact should have confidence in the original reading. Where a second test

is made and the lower of the two readings is used for proof, then there is no realistic conceptual doubt.

## DOUGLAS M. LUCAS

Douglas M. Lucas is the Director of the Center for Forensic Studies for the Minister of the Solicitor General of the Province of Ontario, Canada. He has held that position since 1967 having been on the staff of the Center since 1957. He holds a B.Sc in Pharmacy and an M.Sc in Pharmaceutical Chemistry from the University of Toronto. The Center for Forensic Studies is roughly the equivalent of our State Police Laboratory. As his curriculum vitae indicates, he is experienced and competent in many areas of forensic investigation.

He has responsibility for administration of the alcohol breath testing program for the Province. His duties include training of operators, purchase and maintenance of equipment, purchase of necessary supplies as well as testifying as an expert witness when called up. His laboratory is engaged in the analysis of all types of body specimens and he himself is proficient in the testing of blood samples by means of either chemical analysis or the use of gas chromatography. The laboratory employs the latter method exclusively at present. It replaced chemical analyses formerly conducted. He opines that the accuracy of results from either form of testing is the same. Gas chromatography is better because it lends itself to automation of some procedures and computer print out of results.

Ontario has used the Breathalyzer Models 900 and 900A from 1957 to the present. Lucas is completely familiar with it. He has kept current with the mass of published articles concerning the subject of breath testing and has contributed to that literature.

He impressed me as a very competent, knowledgeable and careful witness. He did not overstate a position and reported facts faithfully as they had been developed.

Aware of the literature suggesting certain possible deficiencies in breath testing for blood alcohol content and of a similar mind to that of Mr. Harding, Lucas, in 1967, decided to run a test to see how breathalyzer operators performed when their reported results were compared to blood samples.

He used the classes of police officers he was training to be Breathalyzer subjects during their 10 day courses on a volunteer basis. While training them in procedures to be followed in administering the test, they were actually using some of their members as subjects.

All trainees were police officers, male, and ranging in age from 22 to 51 years. Each day certain men would volunteer. Over the time covered by the study there were 88 such volunteers. After having a light lunch the men in the volunteer group for that day would be allowed to drink an alcoholic beverage of their choice - beer, whiskey, rum. They were encouraged to drink enough to give helpful test results but not so much as to cause them to fall asleep during the later afternoon class hours. A bank of breathalyzers was set up - some 15 or so - with other trainees as operators. Each volunteer (appropriately numbered) gave a breath sample to one of the machines beginning 15 minutes after his last drink and continuing thereafter at about 15 minute intervals from machine to machine for about three hours. The number, time of test and breath alcohol readings were noted. The trainees were told to estimate the third decimal of

the reading. (Ontario truncates "to the two decimal places read directly from the scale on the machine, e.g. .09 but requires the operator to note on his report his visual estimation to the third decimal, e.g. .097). For his later analysis Lucas did truncate the results as they would be in real life.

About one hour after the last drink a blood sample was drawn from each volunteer by a laboratory technician. That blood sample was actually analyzed within 24 hours and the results reported back to the trainees so that they could see how closely their breath results compared with the blood analysis. Venous blood was drawn from the cubital vein and a whole blood chemical analysis conducted.

So that there could be a comparison of breath with blood readings, and recognizing that the sampling was not simultaneous, Lucas used only those breath readings which were taken within 15 minutes before or 15 minutes after the blood sample.

Urine sampling and testing was also used as a further comparison, but as it obvious when one thinks about it, continuous urine samples on a 15 minute schedule are not realistic.

In the fashion described above, Lucas compiled 1172 breath tests and 114 blood tests from the 88 volunteers. The blood tests reported a range of from .028 to .188 with a .091 average.

As Lucas pointed out, the Breathalyzer actually analyzes the arterial blood alcohol concentration (and converts that

into a scale reading of blood alcohol using the 2100 to 1 assumption built into the indicator scale markings). However, blood analysis is done on venous blood. While absorption of alcohol into the blood from the stomach takes place quite rapidly after drinking, the arterial blood (going to the brain) has a higher concentration than the venous blood which has already passed through the brain.) There is a point at which however, the alcohol concentration of blood throughout the body stabilizes at just about the same level whether in arterial or venous blood. This is true even though maximum blood concentrations may not yet have been attained in the absorption process. Lucas chose the generally accepted time for that as one hour after completion of drinking. He then divided the comparison of breath and blood results into two sections: one covered breath and blood results taken during the first hour after drinking; the other for results taken more than one hour after drinking.

Lucas also recognized that when comparing breath and blood results, there is an assumption that the blood analysis indicates the true blood alcohol concentration and that any discrepancy between breath and blood results is due to some error in the breath test. However, as he stated, and other witnesses in these hearings confirmed, even competent blood tests are not without their own errors. Nothing is perfect.

As to the first hour results, there were 366 breath tests. In 262 of time the breath converted to blood results were lower than the blood analyses. In 104 cases the breath results were higher than the blood results. For breath readings between .01 and .10 there were 32 (8.7%); for

breath readings between .11 and .20, 42 (11.5%) between .21 and .30, 13 (3.5%) and over .30, 7 (1.9%).

As a combined percentage 25.6 of the breath readings overstated alcohol in blood. Lucas was not surprised by that given the expected difference in readings between arterial and venous blood while rapid absorption is still taking place.

Lucas opines that a difference of reading between breath and blood of .01 is to be expected at all times because there is a certain amount of small error possible in either method and he considers such a difference insufficient from the standpoint of reliability.

If during the first hour only those occasions where breath reading exceeded the blood reading by more than .01, the percentage of overstatement would be reduced from 25.6 to 16.9.

The comparisons after the first hour were dramatically different. In that time 806 breath tests were taken. In 122, the breath alcohol expressed as blood alcohol exceed the blood test results. In only 20 of those (2.5%) did it exceed by more than .01. In 10 of those 20 cases a second test was taken on the same instrument and gave a reading within .01% of the blood value leaving only 10 of the 806 or about 1.27% where breath overestimated blood by more than .01. This difference can also be attributable to the arterial-venous distinction noted above.

In Canada, the offense can be committed if driving while ability to do so is impaired by alcohol or where

there is a blood alcohol reading of over 80 milligrams of alcohol in 1200 milliliters of blood (.08%). The Breathalyzer result over .08 raises a presumption that a concentration was present while driving; a presumption which the defense can try to overcome.

From that study Lucas opines that the Breathalyzer, reading as it does, arterial blood, provides a much closer index to driver impairment than does venous blood.

Insofar as a chance that the Breathalyzer will overstate the blood alcohol concentration, Lucas opines that it is virtually non-existent where two breath tests are given at least 15 minutes apart and where the lower of the two is used for prosecution (as in Canada).

In 1985-8 Lucas conducted a second study in much the same fashion. Blood analysis was conducted by gas chromatography. Police officer trainees were used, some of whom were female. There were 187 subjects. 187 blood samples taken about an hour after drinking had concluded; 1285 breath samples within  $\pm 15$  minutes of the blood samples. The blood sample readings ranged from .040 to .205; breath expressed as blood ranged from .032 to .180.

In 251 of the 1285 the breath reading overstated the actual blood test reading (19.5%). In only 18 of those cases did the breath converted to blood reading exceed the blood analysis by more than .01% (1.4% of total). He still considers a .01% difference in readings to be insignificant because expected as a normal analytical difference between two separate analytical procedures.

In that study there were 12 breath results of over .10 where the blood result was under .10. They came from 6 of 187 subjects. Where more than one test result for those individuals was examined only 2 of the six still had breath readings higher than blood readings. In the one case the blood reading was .093. That individual had seven breath tests within 30 minutes. Four were under .10; three .10 or higher .100, .102 and .105. The other individuals had a blood reading of .095. He had 10 breath tests done within the 30 minute period. Six were under .10; four were at or over .101, .102, .015 and .100. Those 2 represent 1% of the subjects and the 7 tests, about 0.16% of the 1285.

In the entire study the greatest difference between a breath sample and a blood test was .018. (with truncation, that would be reduced to .01).

Using the same data, Lucas constructed a table showing the range of (and average within each range) of apparent breath - blood ratios using truncated breath values for various ranges of blood alcohol readings. That table (with the American form of noting readings) is as follows:

Blood alcohol concentration	Average Breath Blood Rates	Range
.001-.039	2728	1050-6510
.040-.059	2500	1680-4725
.060-.079	2532	1830-6300
.080-.099	2430	1848-4253
.100-.119	2431	1928-3500
.120-.139	2432	2025-3630
.140-.159	2395	2128-2787
< .159	2592	2376-2800

That analysis demonstrates three points:

- 1) the apparent blood/breath ratio varies along the range of blood alcohol concentrations - it is not static.
- 2) the greatest variation of the ratio within a particular range of blood alcohol concentration occurs where those values are very low. At the high ranges of blood alcohol concentrations the variation of the apparent ratio is quite small.
- 3) At the "critical" blood alcohol level of .100 to .119 the apparent ratio range is from 1928 to 3500 with an average of 2431. That same average holds for blood alcohol concentrations of .080 to .099 and of .120 to .139. All of the averages greatly exceed the 2100 to 1 assumption built into the Breathalyzer leading to the conclusion that it has a built-in bias to deliver a lower-than-actual blood alcohol result - at least in the average of subjects tested.

As Lucas notes, the apparent blood/breath ratio is simply a reconstruction from actual readings of both. It is the difference in them that is essential in order to decide whether the breath result is valid. The apparent ratio is not terribly significant but may have some use in making rough comparisons. That breath result reading in apparent BAC has already been biased with the built-in 2100 to 1 ratio. As to possible in-court harm to an accused from a breath reading of over .10 and a blood reading below .10, Lucas relied on the study which, in summary showed that, given at least two breath tests and using the lower reading only 2 out of 187 subjects could be said to have been prejudiced - and then based only on a venous blood reading.

An added "safety factor" to the accused in that regard is that the Breathalyzer needle is set at a "start line" providing a negative bias of .003 to any final reading.

Based on his experience Lucas concludes that the Breathalyzer as a device to analyze alcohol in air is a very good instrument. The variation in its readings occur in the quality of the air sample it is given to analyze. Unless it receives a deep lung or alveolar air sample it will produce a low blood alcohol reading - a bias against proper prosecution. Given such air it produces a reading very close to the alcohol then present in arterial blood and if there is an error it is on the low side, because of the 2100 to 1 ratio assumed and because of truncation of the reading.

He agrees that hypothetically, and because of the .01 variation that is recognized when comparing readings from two different analytical processes, a person who has a .10 Breathalyzer reading could have an venous blood reading (if one were simultaneously taken) of .11 or .09. The simultaneous arterial blood reading is, effectively immeasurable.

## RODNEY G. GULLBERG

Rodney G. Gullberg is the Supervisor of the Breath Test Section of the Crime Laboratory of the Washington State Patrol. He holds the rank of sergeant with the State Patrol. His section is responsible for the breath testing program throughout the state including training of operators and maintenance of instruments. He has been in the breath testing field for 10 years. He holds a B.S. degree in Animal Science and an M.S. degree in Public Administration. Active in various forensic associations he has authored a number of published articles dealing with breath testing for alcohol. He has conducted near-simultaneous testing of blood and breath samples and made correlation studies of the same. The State of Washington used the Breathalyzer 900A as its standard test instrument converting a breath alcohol reading to a blood alcohol reading based on a 2100 to 1 ratio. He is a qualified Breathalyzer Operator, Technician and Instructor.

In recent years the State of Washington has changed from the Breathalyzer to a BAC Verifier Data Master. It is an infrared, computerized, breath analysis instrument. Its results are not more accurate than those of the Breathalyzer. Each of the 158 instruments used throughout the State is connected to a host computer at the Laboratory. Information obtained by questioning the subject also goes into the data base. Each test has a computer print out from the instrument. The results are stored simultaneously in the host computer. To a large extent the operator is removed from the test procedure. As the individual blows into the instrument it continually measures the alcohol content every quarter of a second to be sure the breath sample is valid and then prints out a truncated

2 decimal place result (even though the instrument itself is capable of giving a 3 decimal place result).

Washington, in June 1986, changed from a statutory .10% by weight of alcohol in the blood (.10 gr per 100 ml) to a standard of .10 grams of alcohol per 210 liters of breath. The BAC Data Masters give a direct breath alcohol reading.

Gullberg conducted two studies regarding near-simultaneous taking of blood and breath pairings. Both were done with trainees at the State Patrol Academy. Over a period of four years from 1979 to 1983 he collected 123 blood-breath pairs. The subjects were, typically, healthy police officers. The 123 pairs were not from 123 separate individuals. There were some 60 to 70 persons involved. Individuals would consume alcoholic beverages. After a period of time (of at least one hour) breath samples were taken with a Breathalyzer; venous blood samples were drawn by qualified personnel. Blood samples were taken within 15 minutes of breath samples. The Breathalyzer readings were in breath alcohol converted to blood alcohol using 2 decimal place truncated readings of grams per 100 milliliters (g/100 ml). Blood alcohol readings by gas chromatography analysis were 3 decimal place readings in grams per 210 liters (g/210L). He made graph plottings of the correlation of those two values using a computer soft-ware statistical package.

In 8 out of the 123 pairs (6.5%) the breath-converted-to-blood reading gave a higher result than did the blood analysis. In those 8 cases the difference between the two readings varied from .02 to .01. There were 7 with a .01 difference and one with a .02 difference. In 115

cases the Breathalyzer and whole blood readings were either equal or the Breathalyzer read lower than the whole blood analysis.

All of the 8 overestimations were below the .10 level. The largest difference was where the blood read .02 and the breath-converted-to-blood read .04. The highest level at which breath overestimated blood was where breath was .09 and blood .08.

The calculated blood/breath ratios then ranged from 1000 to 3700 with 72% clustered in the 2100 to 2800 range.

Using the BAC Data Master, Gullberg conducted another study of blood-breath correlation. In a similar fashion to the first, there were about 50 trainee subjects - police officers aged 25 to 50; 39 males - 11 females. They produced 90 paired samples of blood and breath taken within 15 minutes of each other. Generally the breath sample was the first taken.

Alcohol was ingested; a period of time of at least an hour allowed to elapse and then the breath sample was read by a Data Master and the blood sample taken by a technician and analyzed by gas chromatography.

This study was conducted in 1985 at a time when Washington still used a blood standard for drunk driving. The Data Master was then reading out in breath-converted-to-blood.

In those 90 paired samples the breath-converted-to-blood result was higher than the whole blood analysis

in 8 cases. The maximum difference between the two in those 8 cases was .007; the lowest .001. 5 were below the .10 critical level; 3 were above. In one case the breath/blood reading was .135 and the blood .130; in the second, blood/breath .115 and blood .112 and in the third, breath/blood was .122 and blood .121. With truncation there would be no overestimations. The calculated ratios between the blood samples and the breath samples varied from a low of 1900 to a high of 5600 with 80% grouped between 2100 and 2700.

The critical ratio for any person for prosecution purposes is his conversion ratio at the .10 alcohol in breath or blood level. If he has only a .02 reading the conversion ratio is meaningless. So too is it if the reading is .20. The Breathalyzer is calibrated with an assumed conversion ratio of breath to blood of 2100 and at that .10 level it consistently underestimates actual blood samples or gives accurate readings. It does not overestimate.

## PATRICK M. HARDING

Patrick M. Harding is a graduate of the University of Wisconsin with a degree of B.S., Biochemistry, received in 1975. He is presently employed by the Wisconsin State Laboratory of Hygiene as a Chemist (since 1977) and as a Breath Testing Specialist (since 1982). He is fully familiar with testing procedures for presence of ethylalcohol (ethanol) in the blood, urine or breath of individuals. He is a qualified Breathalyzer operator and supervisor in Wisconsin and instructs trainees for those positions. His laboratory furnishes research and scientific support for the Wisconsin breath alcohol testing program. The laboratory itself is not an arm of law enforcement but is a state public health laboratory. In Wisconsin samples of breath, blood or urine may be used to test for the presence of alcohol. The local police department may designate one of those methods for its law enforcement purpose. Almost all have opted for the Breathalyzer 900 or 900A. (in 1986 Wisconsin ceased using the Breathalyzer and adopted the Intoxilyzer 500 instead.)

The person accused of drunk driving has the right, at State expense, to an alternate test - either blood or urine - as designated by the State. Almost all governmental units designate blood testing. The accused may also, at his own expense, be tested by the remaining method (i.e. blood or urine - in most cases urine).

The State Laboratory is one of 21 approved testing laboratories for the presence of alcohol in blood or urine. When an accused is arrested and breath tested, a blood sample is usually also drawn according to procedures required by, and with standard equipment supplied by,

the State Laboratory. This whole blood sample is "venous" (as distinguished from "arterial") blood, and is extracted in the usual fashion from a vein in the inner elbow area. The police department send a report form along with the whole blood sample to be tested to the laboratory. That form already has noted thereon the breath alcohol reading obtained from the Breathalyzer. The laboratory then tests the whole blood sample and enters the blood alcohol reading on the same form; returns one copy to the sending department and retains a copy for its files.

Because of his awareness of questions being raised about the reliability of brath test results (including arguments based on the 2100:1 blood-breath alcohol ratio) Harding decided to run an analysis bsed on the many available test forms on individuals, which forms had been retained in his laboratory. He selected the years 1983 and 1984. (His study was begun in early 1985). In the files he found somewhere between 500 and 520 reports. On each was noted (by the police) the time of the breath test and its result and the time of taking the blood sample. Later added to the report was the result of testing the blood sample. Because the presence of alcohol in a person's blood is constantly changing condition (based on absorption and elimination) Harding did not use any reports where the difference in time between taking of breath and blood samples was more than an hour. In addition, where results seems to vary widely (40 cases) Harding checked with the original reporting officer and eliminated seven because of improperly operating equipment or poorly obtained breath samples. That left him with 404 breath-blood pairs which he then compared.

While any breath-testing machine (such as the Breathalyzer) actually "reads" the quantity of alcohol in a known quantity of breath and can indicate that amount directly on a visible scale, in order to convert that amount of alcohol in the breath into a presumed amount of alcohol in the blood (which within the lungs generates that alcohol in the breath) the "read-out" scale is converted to read in amounts of alcohol in blood. That conversion is made based on an assumed ratio that for one part of alcohol in the breath there will be 2100 parts of alcohol in the blood. Therefore, the "breath" readings given by the Breathalyzer used in Wisconsin (and in New Jersey) are actually assumed blood readings based on the alcohol read in breath and converted into blood readings by the scale calibrated on the 2100 to 1 ratio.

In his study Harding worked with the raw field data only. He had no knowledge about the subjects tested whatsoever. One of his purposes in running the study was to check the assumption that the Breathalyzer operators in the field were correctly administering the breath tests.

The data with which he worked was not exactly the same for each paired test. Blood analysis in the laboratory is carried to the third decimal place. Thus the blood alcohol level might be reported as .165% by weight. The comparable Breathalyzer reading is reported to just two decimal points, for example .15. The meter scale on the Breathalyzer is graduated in units of .01. The operator can, by looking, estimate the position of the needle if it falls somewhere between the gradations and can estimate a reading to the third place, as, for example, .157. However, as a matter of universal procedure with

Breathalyzers, that reading is "truncated" to the lower gradation and is recorded as .15. That means that, in fact, when a Breathalyzer report is given as .15% blood alcohol the machine may be reading anywhere from .150 to .159. The third decimal place is simply dropped.

To classify his results on the study of the 404 pairs he used an assumption that the breath readings and blood readings were in agreement if they differed by a .01 or less. (This was because the breath reading was truncated). The breath alcohol concentrations varied among the 404 subjects from .00 to .44 while the blood alcohol concentrations varied from .000 to .421.

The study revealed that in 61% of the cases (245) the Breathalyzer results were lower than the blood analysis results; in 33% of the cases (133) the Breathalyzer and blood analysis results were in agreement and that in 6% of the cases (26) the Breathalyzer results were higher than the blood analysis results.

Recognizing that in Wisconsin a .10 Breathalyzer reading is "per se" proof of a violation of the drunk driving statute, Harding examined those 26 cases in which the Breathalyzer read higher than the blood analysis. At the level of a .10 Breathalyzer reading in that category there were 5 (with corresponding lower blood readings). The corresponding blood readings were .095, .096, .097, .099, .096. These represented just 1.2% of the subjects tested and in only one of the five cases did the difference reach .005. In cases where the Breathalyzer reading was .11 there was just one case in which the Breathalyzer reading exceeded the blood reading. There the breath result was .11 and the blood result .096.

Harding concluded that the breath readings alone had not resulted in any wrongful convictions and that, given the back-up blood test taken, that was even more certain. For the purpose of his study he concluded as follows:

It was found that Breathalyzer and blood-alcohol results correlated well and that blood-alcohol concentrations tended to be underestimated by the Breathalyzer. This bias was observed in 61% of the cases in spite of the fact that the Breathalyzer test almost always preceded the blood test and that alcohol elimination would be expected to cause a greater incidence of breath results "overestimating" blood-alcohol concentrations. We found no evidence of operators altering Breathalyzer results, radio frequency interference causing elevated Breathalyzer readings, or volatile substances other than ethanol causing elevated Breathalyzer readings.

In the hands of police officers in a nonlaboratory setting, Breathalyzers can be expected to underestimate blood alcohol concentrations.

The importance of Hardings' study is that it gives a picture, based on a random and rather large sample, of the real-life reliability of Breathalyzer results in the hand of competent operators in field conditions. It is, in a word, a view of the forensic, police-courtroom scene and serves as a counterpoint for the pure scientific critiques that were likewise received and evaluated by this fact-finder.

Concedely, Hardings was not a scientific study' it was an examination of previously reported data from which over 100 pairs of figures were eliminated as untrustworthy

for reasons which he expressed. None of the scientific witnesses challenged his conclusion that "Breathalyzers can be expected to underestimate blood alcohol concentrations."

## GERALD D. SIMPSON

Gerald D. Simpson has a Ph.D. in Physical Chemistry currently retired on disability from the Technical Staff, Rock-  
etdyne Division of Rockwell International. While employed there he was a research scientist in laser effects and spectroscopy of organic molecules in biological systems. Among other matters he is familiar with the measurement of the amount of alcohol in vapor through the use of spectroscopy, i.e. light absorption. California, his home state, uses infrared breath analyzers as part of its program to enforce drunk driving laws. He is familiar with that instrument.

In the early or mid-1980's and retired at the time, he became interested in measurements of breath alcohol concentrations. He read the available literature on the subject and came to some conclusions of his own. As his curriculum vitae indicates he began publishing articles on breath alcohol measurements in 1987 and has continued to do so down to the present. He has, as a result, testified for the defense in selected drunk driving cases but received no fee for doing so. As a retiree, he has the time available.

He himself has conducted no original experiments. In that, his approach is similar to that of Dr. Hlastala, that is, he uses the published data of others as a basis for his conclusions. Unlike the very competent background in the physiology of the human lungs which Dr. Hlastala brought to his work, Dr. Simpson used a statistical approach which, as he said, any college student taking a course in analytical chemistry could have done. That

process is called error analysis and is based on statistics and the use of the standard deviation.

In comparing the raw data reported by various scientists in the literature, it was necessary that he evaluate the results reported by each and selected data he deemed more reliable (and rejected the less reliable.) - again using statistical techniques such as standard deviations from a mean to achieve that result. Although he characterized the Breathalyzer as a crude measuring instrument, he did find, after all of his analysis, that it is a very valid scientific instrument for the purpose of measuring concentration of alcohol in the breath. However, his initial perception was one of disbelief that such a simple instrument could give reliable results.

Among others he examined that data of Drs. Dubowski, Payne and Jones - all acknowledged as VETERAN AND WORTHY WORKERS in the field. He considered Dr. Dudowski's data to be the most reliable. His conclusion, based on statistical analysis was that the bare minimum uncertainty in a breath reading expressed as alcoholism in the blood was  $\pm$  15%. In concrete terms that means that a reading of .10% blood alcohol could indicate a true value of anywhere from .081 to .115 (using two standard deviations which gave 95% confidence level in the result). This  $\pm$  15% error contrasts with the  $\pm$  10% error claimed for the Breathalyzer by the manufacturer. Of that error, very little was attributable to the Breathalyzer and its calibration. He estimates that over 90% of the error he found came from biological variables. He also opined that the giving of two breath tests instead of just one would affect his judgement as to error.

If three standard deviations were applied to the same data then the uncertainty in the reliability of the result would broaden to a  $\pm$  27%. He considered Dubowski's data superior to that of Jones for a number of reasons. All of the foregoing conclusions were based on data for the post absorptive (post-peak) state.

In a similar fashion Simpson analyzed available absorptive stage data. That body of information is much sparser than is the data for post-absorption. He reached a conclusion that in the absorptive stage the breath test read out in estimated blood alcohol using three standard deviations could have an error as much as  $\pm$  70%. Having heard the basis for the conclusion I can place no confidence in it and, my impression was that Dr. Simpson did not. It was a number, based on other numbers whose validity was not demonstrated.

Simpson accepts two standard deviations (95% confidence in the result) as practical for forensic work and comes to his  $\pm$  15% error possibility knowing that a 2100 to 1 conversion ratio is built into the Breathalyzer. For him the problem lies in that 2100 to 1 conversion ratio and the blood alcohol reading it projects. If the ratio were reduced to 1800 to 1 he agrees the possibility of an overreading by 15% would be eliminated.

His main thesis is that none of the scientific experimenters (on whose data he relied) had ever taken the time to apply a fundamental scientific tool (error analysis) to their work. That struck me as the exercise of rather substantial intellectual pride on his part. Combined with his own subjective choice of whose data he used and whose he did not leads me to conclude that his

statistical approach to quantifying error that would adversely affect a defendant in a drunk driving case, is simply not reliable and I reject it.

His bottom line opinion is that the Breathalyzer should not be a "per se" machine. It is a valuable tool in enforcing a law against driving while under the influence, but when the term is defined as being .10% grams of alcohol in the blood and the Breathalyzer reading of that level is used, without more, to convict - there is a very real chance that someone will have been unfairly convicted.

CONSTITUTION  
of the  
UNITED STATES OF AMERICA

AMENDMENT 5

Criminal actions --- Provisions concerning --- Due process of law and just compensation clauses.

No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service in time of War or public danger; nor shall any person be subject for the same offence to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.

AMENDMENT 6

Rights of the accused.

In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed, which district shall have been previously ascertained by law, and to be informed of the nature and cause of the accusation; to be confronted with the witnesses against him; to have compulsory process for obtaining witnesses in his favor, and to have the Assistance of Counsel for his defense.

## AMENDMENT 14

### Section 1. Citizens of the United States.

All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws.

